PACIFIC PULP AND PAPER INDUSTRY

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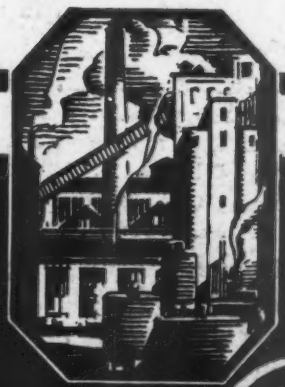
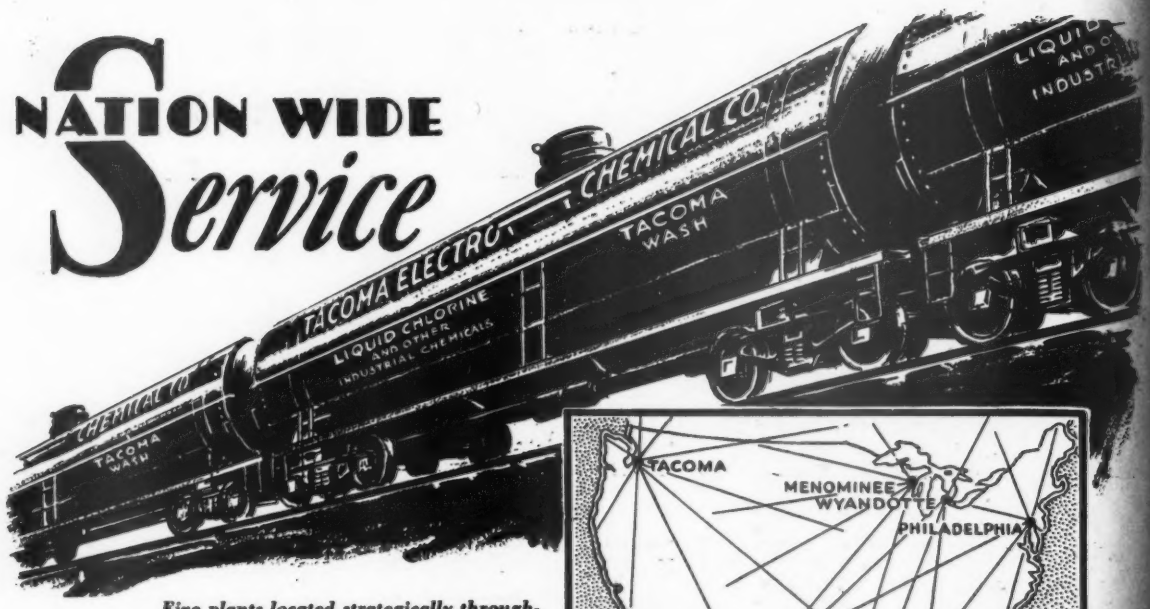
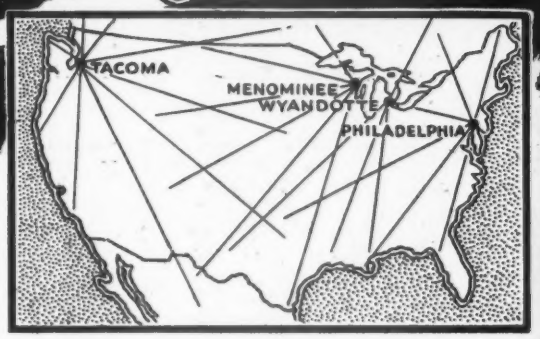


Review Number

NATION WIDE *Service*





Five plants located strategically throughout the United States enables the PENNSYLVANIA SALT MANUFACTURING COMPANY to render dependable NATION-WIDE SERVICE to producers of pulp and paper.

Liquid Chlorine

PENN SALT had its modest beginning in 1850 and from the outset built a reputation for service to its customers. From original Atlantic Coast plants this service was systematically extended into the Middle West and South and in recent years to the Pacific Coast.

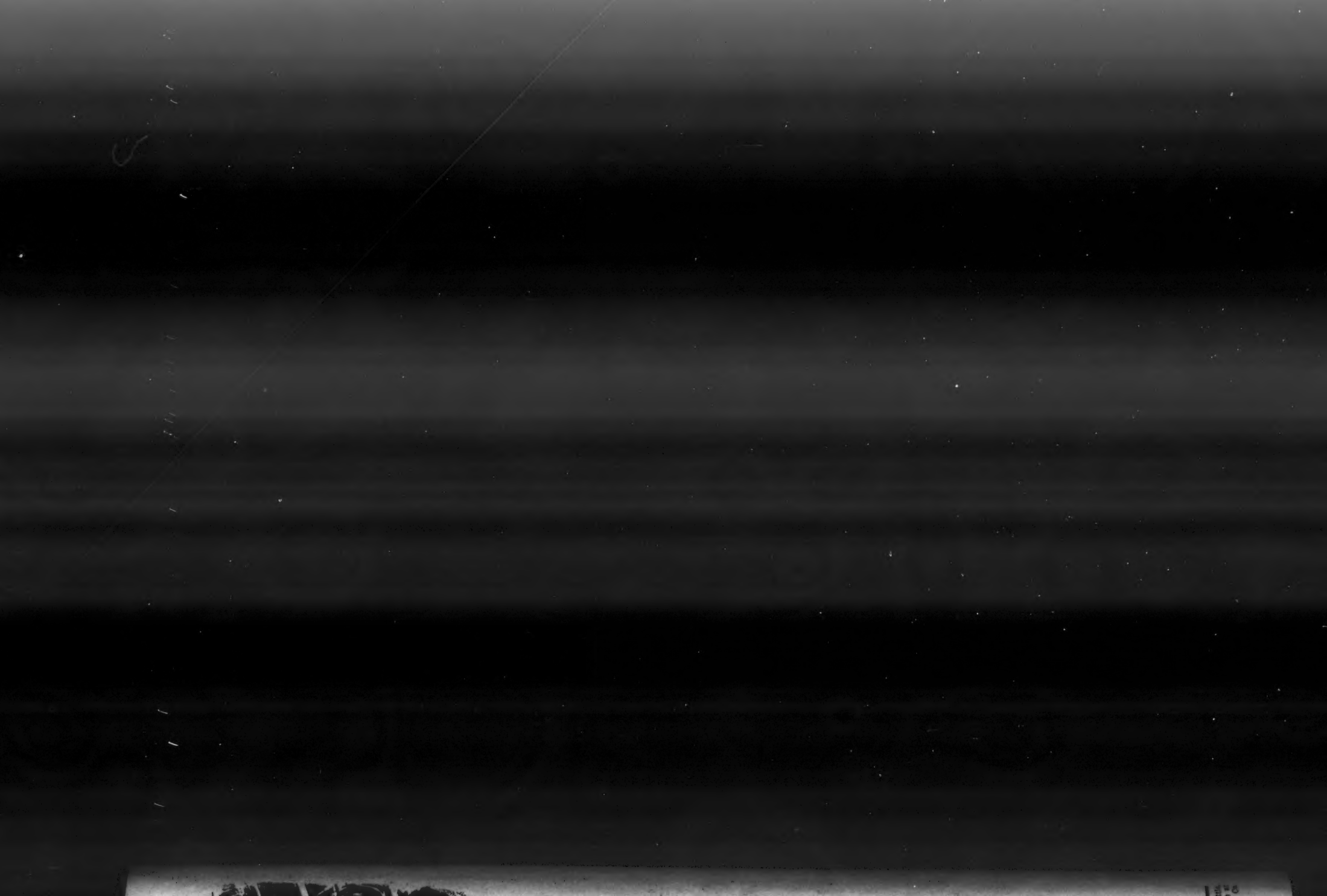
NATION-WIDE SERVICE BY PENN SALT not only embraces prompt delivery of chemicals when ordered but also guarantees constantly maintained HIGH QUALITY. PENN SALT service further includes experienced technical assistance to customers in the solution of their problems.

RELY ON PENN SALT Quality Chemicals.

TACOMA ELECTROCHEMICAL COMPANY
Division of
PENNSYLVANIA SALT MANUFACTURING COMPANY
PHILADELPHIA, PENNSYLVANIA • • • TACOMA, WASHINGTON

SULPHATE *of* ALUMINA—BLEACHING POWDER
CAUSTIC SODA

Pacific Pulp & Paper Industry is published once a month—except in April, when publication is semi-monthly—at 71 Columbia St., Seattle, Wash. Subscription: U. S. and Canada, $4.00; other countries, $5.00. Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879. Vol. 6, No. 5, Review Number, April 30, 1932. Contents copyrighted, 1932, by Consolidated Pub. Co.



AN OLD SUCTION COUCH REPAIRED, CAN'T GIVE YOU *MODERN FEATURES* LIKE THIS

LOOK at the modern features of this new-type Beloit Suction Couch Roll. Compare it with your old-type plain-bearing 18" to 25" diameter roll. Check the points one by one. Then you'll see why nearly 200 installations of this Beloit roll have been made in recent years.

Mills from coast to coast recognize that in this day of close competition, new and better ideas must be adopted to keep costs down and production up, on an economical, efficient basis.

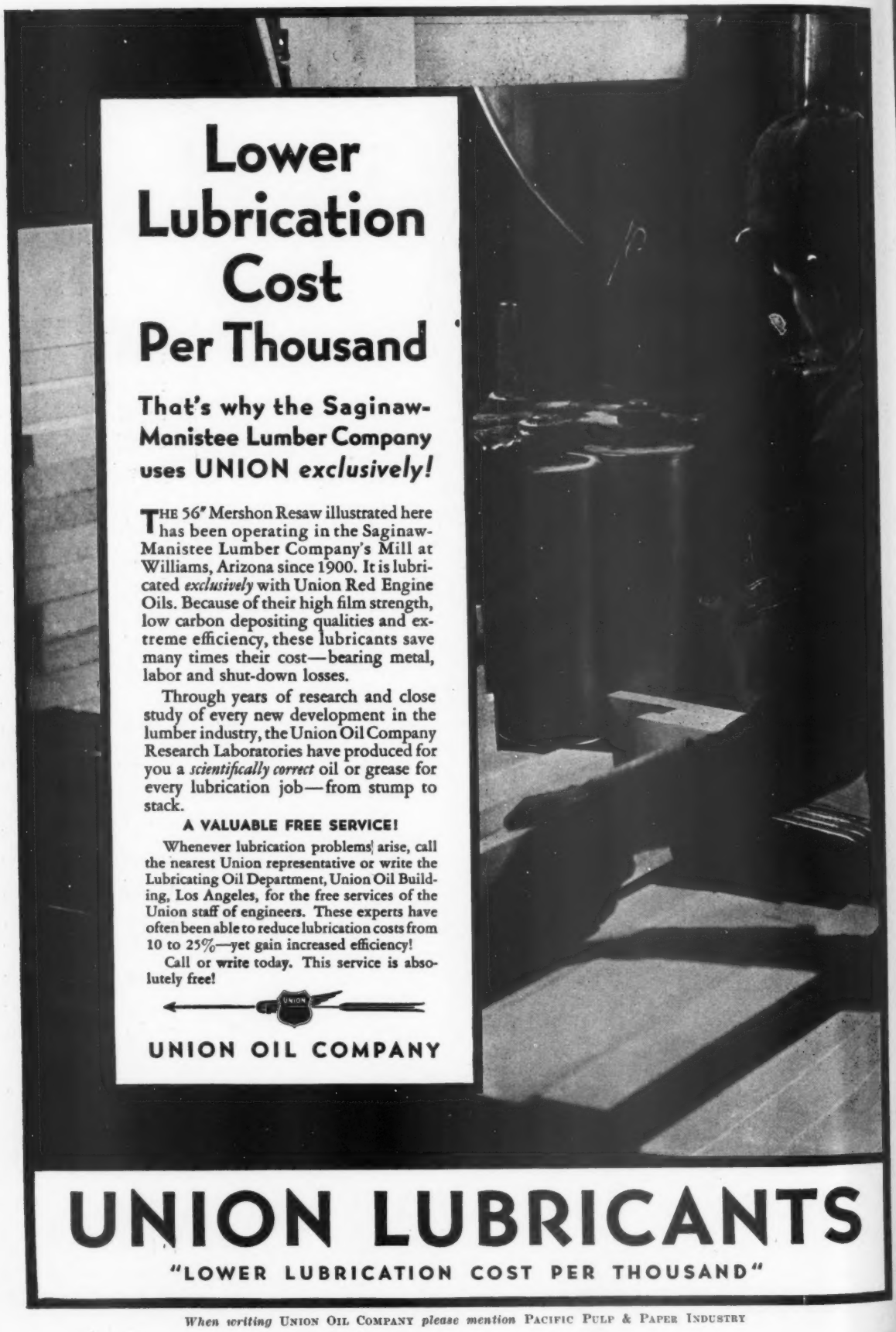
SEND FOR THE NEW MANUAL

The Beloit Suction Roll Manual gives the facts about the use of Beloit rolls on all grades of paper. Send for it, without cost or obligation.

The *Beloit* Way is the *Modern* Way

BELOIT IRON WORKS, BELOIT WIS., U. S. A.

The BELOIT



Lower Lubrication Cost Per Thousand

That's why the Saginaw-Manistee Lumber Company uses UNION *exclusively!*

THE 56" Mershon Resaw illustrated here has been operating in the Saginaw-Manistee Lumber Company's Mill at Williams, Arizona since 1900. It is lubricated *exclusively* with Union Red Engine Oils. Because of their high film strength, low carbon depositing qualities and extreme efficiency, these lubricants save many times their cost—bearing metal, labor and shut-down losses.

Through years of research and close study of every new development in the lumber industry, the Union Oil Company Research Laboratories have produced for you a *scientifically correct* oil or grease for every lubrication job—from stump to stack.

A VALUABLE FREE SERVICE!

Whenever lubrication problems arise, call the nearest Union representative or write the Lubricating Oil Department, Union Oil Building, Los Angeles, for the free services of the Union staff of engineers. These experts have often been able to reduce lubrication costs from 10 to 25%—yet gain increased efficiency!

Call or write today. This service is absolutely free!

UNION OIL COMPANY

UNION LUBRICANTS

"LOWER LUBRICATION COST PER THOUSAND"

When writing UNION OIL COMPANY *please mention* PACIFIC PULP & PAPER INDUSTRY

• *A Review of* •

LOCKPORT FELT COMPANY

Established February 6, 1891

Forty-one years' experience in one line only: PAPER MAKERS FELTS.

The only Felt Mill confining its activities to this one product.

Originators of TENAX Felts, which have never been equalled for durability, length of service, draining qualities, easy running, finish and satisfactory results in every direction.

TENAX BOARD FELTS hold all records for finish, service and production on fast running Board Machines.

Our General Mill Manager, and Felt Designer, Joseph Robinson, has had more years' experience in handling wools, and designing Paper Makers Felts than anyone in a similar capacity in the United States at the present time.

He brought out our unexcelled Suction Press Felt for fast running Fourdrinier Machines, which have never been equalled.

A trial order invariably results in further and continued orders.

Our Policy:

Prompt attention, Service and Consideration.

Our Attitude:

While we admit we make the best:
We'll always continue to respect the rest.

Our Aim:

Fair treatment toward those from whom we buy and toward those to whom we sell.

Our Slogan:

Non-users are the Losers.

TENAX FELTS

• • •

LOCKPORT FELT COMPANY

NEWFANE, N. Y.

ALAN C. DUNHAM, *Pacific Coast Representative*, Portland, Ore.

GUIDE POSTS

FOR

USERS OF LIQUID CHLORINE

TO FIND NEW ROADS TO IMPROVED PROCESSING, TO AVOID DETOURS IN REACHING BETTER OPERATING ECONOMIES, DEPEND ON HOOKER ENGINEERING AND RESEARCH FACILITIES FOR USERS OF LIQUID CHLORINE AND OTHER CHEMICALS.

THERE'S A GENERATION OF ACHIEVEMENT BACK OF HOOKER "GUIDE POSTS." THEY HAVE DEVELOPED EQUIPMENT, FORMULAS, SHORT-CUTS, ECONOMIES, PROFITS IN PRACTICALLY EVERY CHEMICAL-USING INDUSTRY.

WHAT ARE YOUR NEEDS?

RESEARCH LABORATORY BUILDING

CONTROL LABORATORY

HOOKER ELECTROCHEMICAL COMPANY

WESTERN
PLANT—TACOMA, WASH.
SALES OFFICE: TACOMA, WASH.

EASTERN
PLANT—NIAGARA FALLS, N. Y.
SALES OFFICE: 60 E. 42ND ST., NEW YORK

HOOKER CHEMICALS

2300

PRODUCTION SCHEDULES WITH SKF ARE UNINTERRUPTED

WHERE PERFORMANCE TAKES PREFERENCE OVER PRICE

CONTINUOUS OPERATION...one thing paper mills demand and SKF Bearings give . . . makes SKF Performance Take Preference Over Price in the paper industry. On this battery of three Tolhurst Suspended Paper Stock Clarifiers, built-in-type, SKF Bearings are used in the heads of each machine . . . to assure dependable operation free from bearing trouble and with comparatively very little attention.

Clarifiers are an important unit in the manufacturing process. Paper stuff is run through these machines continuously, just before it goes on the paper machine, to remove impurities in the stock so as to produce a beautifully clean sheet of paper.

The machines operate at 600 R. P. M. and the rotating elements are 40" in diameter. SKF Bearings meet the exacting standards of this work, assuring the utmost reliability, no shutdowns and a maximum of production.

You may buy a bearing as a bargain but try and get a bargain out of using it, for nothing is apt to cost so much as a bearing that cost so little.

SKF Industries of California, Inc.

221 Eleventh St. San Francisco | 480 Burnside St. Portland, Oregon | 1114 South Hope St. Los Angeles

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SKF

Ball and Roller Bearings

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P M C

SERVICE THAT REACHES EVERY MANUFACTURER OF PAPER —WHETHER HE BUYS FROM US OR NOT

No single organization has contributed so much toward the improvement of paper-making chemicals, and thereby toward the improvement of paper manufacture, as has Paper Makers Chemical Corporation. Its achievements have been so numerous and far-reaching (especially in the development of new and improved products) that the entire industry has benefited. Now, whether you buy from P. M. C. or not, you profit by the contributions it has made to the industry.

P. M. C. customers, however, get full and immediate benefit of this service. Its extensive research, the use of higher grade ingredients, development of new products and improved methods of applying standard ones,—the benefits of all these are wholly realized on by customers.

P. M. C. customers are freed from all worry about their paper-making chemicals. They know that the manufacture of rosin size, for instance, in such large quantities (far larger than any one manufacturer could use), guided by strict chemical control, means size, the qualities of which are absolutely dependable and uniform. And it is only by such quantity production that the necessary dependability and uniformity can definitely be maintained.

This quantity production protects both quality and price, for P. M. C.'s independent source of rosin and its large purchases of other raw supplies, afford advantages which this company is happy to pass on to its customers.

P. M. C. operates seventeen plants which are located so that paper manufacturers can receive P. M. C. products with a minimum of delay. Get in touch with the nearest plant-office; your order in any quantity from small packages to tank cars will receive prompt attention.

SUPERIOR

ROSIN SIZE • SATIN WHITE • INDUSTRIAL CHEMICALS

A full line of chemicals for the paper trade. Prompt delivery in any quantity from 17 large plants.

P M C

PAPER MAKERS CHEMICAL CORPORATION

KALAMAZOO, MICHIGAN

Kalamazoo, Mich.	Boston, Mass.	Savannah, Ga.
Wilmington, Del.	Albany, N. Y.	Atlanta, Ga.
Milwaukee, Wisc.	Lockport, N. Y.	Marrero, La.
Easton, Pa.	Carthage, N. Y.	Portland, Ore.
Holyoke, Mass.	Pensacola, Fla.	Burlington, Ontario
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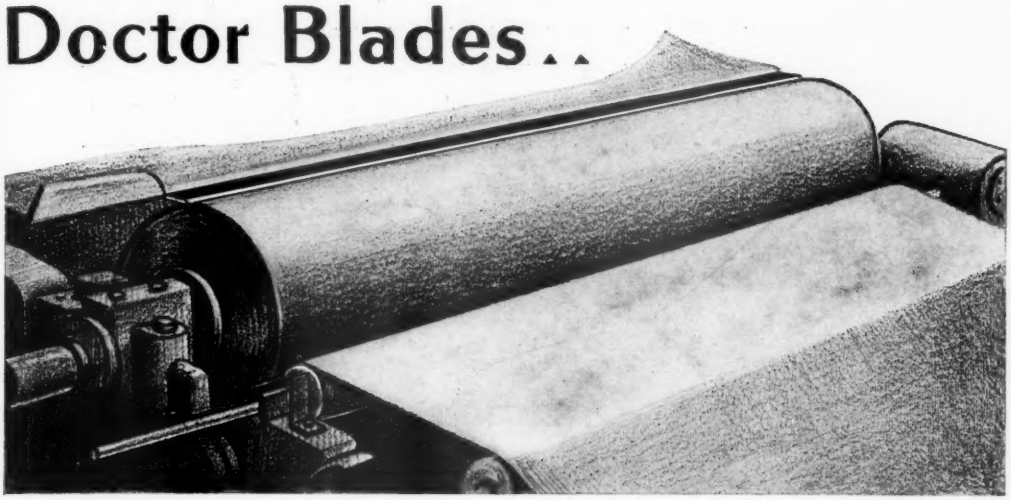
MICARTA

Doctor Blades..



they last longer

DOCTOR blades of Micarta have the combination of flexibility and toughness. The blade bears tightly against the roll without excessive pressure, cleaning it thoroughly and causing little wear on either the blade or the roll. Grooving and scoring are entirely eliminated.

Micarta doctor blades will not chip, crack, nor warp. They are not affected by acids, alkalis, or other chemicals in pulp solutions. The life of a Micarta blade, properly installed, is two years or more.

The flexibility and strength of Micarta, with its resistance to chemical solutions, adapt it especially to paper mills. Micarta already has proved its economy in a number of applications. Let us send you our folder, telling of the installations. Just mail the coupon.

Westinghouse

T 79119

Quality workmanship guarantees every Westinghouse product

SEND FOR BOOKLET

Westinghouse Electric & Manufacturing Company
Room 2-N, East Pittsburgh, Pa.

Please send me Folder 8237, What Micarta Can Do in the Paper Industry.

Name .....

Company .....

Address .....

City ..... *State* ..... PPPI 4-30-32

ARE YOUR CUSTOMERS DEMANDING

BETTER FINISH

?

If you are confronted with this problem we can help you.

Three years ago Kenwood offered a new line of Plate Press felts which has been accepted by the trade throughout the country.

The sale of these felts has increased steadily from month to month even during the past year when most paper mills have curtailed production extensively. This means that Kenwood Plate Press felts are enabling the paper manufacturer to produce a sheet that is meeting the exacting demands of the trade for better finish.

In these times of keen quality competition your finish must be the best that it is possible to obtain. Kenwood Plate Press felts will solve this problem for you.

The demand for better finish has led board makers as well as the manufacturers of fine paper to turn to Kenwood for these felts which are so outstanding in their ability to produce fine finish without sacrifice of life or water removal.

Ask our representative to tell you about the Kenwood Plate Press felts.

KENWOOD WOOL PRODUCTS

KENWOOD *tanned* FELTS

F. C. HUYCK & SONS

KENWOOD MILLS, ALBANY, N. Y.

KENWOOD MILLS LTD., ARNPRIOR, ONTARIO, CANADA

When writing F. C. HUYCK & SONS, *please mention* PACIFIC PULP AND PAPER INDUSTRY.

Quality
BLEACHED
SULPHITE
PULP
PUGET SOUND
PULP & TIMBER COMPANY
EVERETT, WASH.
DOMESTIC & EXPORT
SHIPMENTS

PULP

PERKINS-GOODWIN CO.

Established 1846

551 FIFTH AVENUE, NEW YORK

TEL. VANDERBILT 3-2800

PAPER

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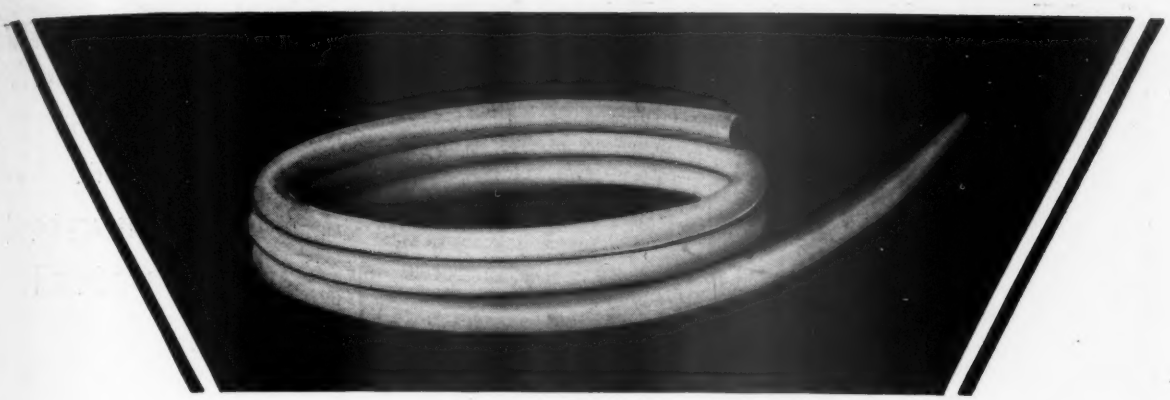


With or Without Soft Nozzle—
GOODYEAR SANITARY HOSE
Leads All

The most useful and economical hose around any mill — say those who are using it — is this Goodyear "Style M" Sanitary Hose.

It stands dragging over brick or concrete. It stands being run over by trucks, and continued flexing and bending. It is toughly resistant to acids and other process liquids. It can be used for either steam or water.

If you order it *with the soft nozzle built in*, you will find it a valuable protection against damage to screens.

A fine hose, capable of long, dependable service in your hardest mill usage, Goodyear "Style M" Sanitary Hose is recommended by the G. T. M. — Goodyear Technical Man. The G. T. M.'s recommendations on Belting, Hose, Packing and other Mechanical Rubber Goods are saving money in many mills. You can get in touch with him simply by writing to Goodyear, Akron, O., or Los Angeles, Cal.

TUNE IN: Goodyear invites you to hear John Philip Sousa and his Band . . . Arthur Pryor and his Band . . . Revellers Quartet and Goodyear Concert-Dance Orchestra . . . every Wednesday and Saturday night, over N. B. C. Red Network, W E A F and Associated Stations

THE GREATEST NAME IN RUBBER

GOODYEAR

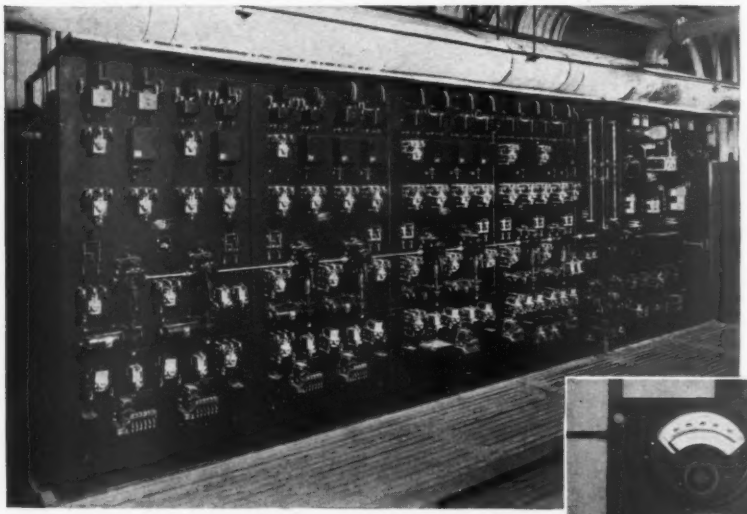
BELTS • MOLDED GOODS • HOSE • PACKING

A New Sectional Drive for Longview

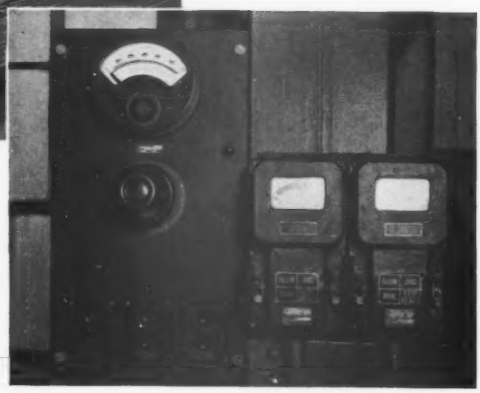
•

and again G-E compensated Selsyn control

•



Compensated Selsyn control panel in the Longview Fiber Company's plant, Longview, Wash.

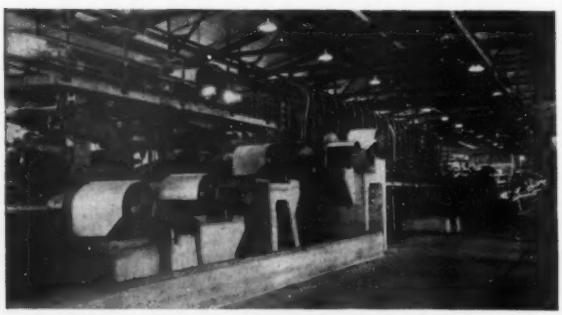


Paper-machine-room master control panel; also two sectional control stations with splash-proof meters

YOU who know paper and paper production will appreciate what the G-E compensated Selsyn-controlled sectional drive offers you:

Finger-tip control; sectional control stations that indicate at all times the performance of the section; master control for direct, quick speed adjustment.

Steam-balance generator set that provides the greatest economy under all operating conditions. G-E compensated Selsyn control, providing superior performance at low speeds, offers you these and other advantages; why not ask your nearest G-E office, or write to the General Electric Company, Schenectady, N. Y. for complete information?

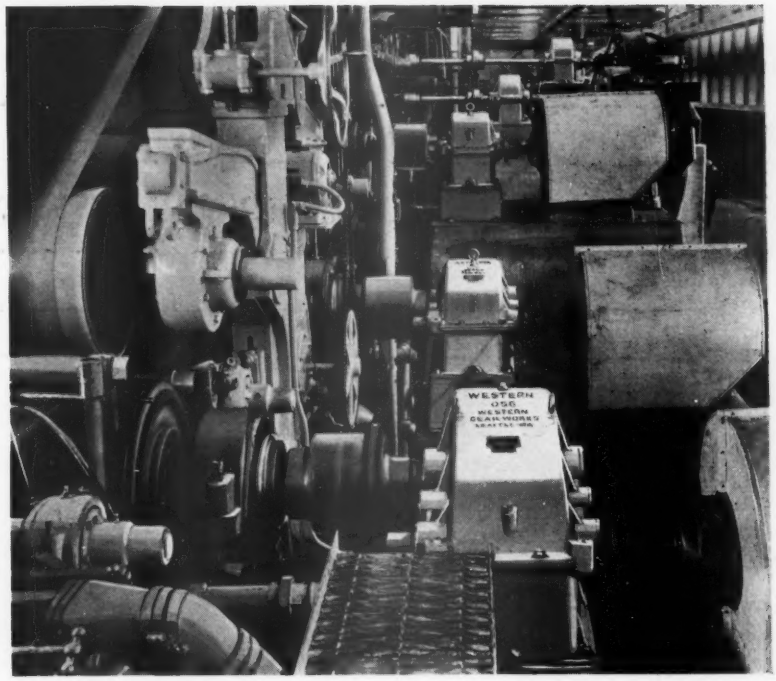


90-inch Moore and White paper machine with Minton Vacuum dr.er and G-E compensated Selsyn sectional drive

Steam-balance, turbine-synchronous-motor generator set supplying power to the sectional drive and low-pressure steam to the driers

237-58

GENERAL ELECTRIC



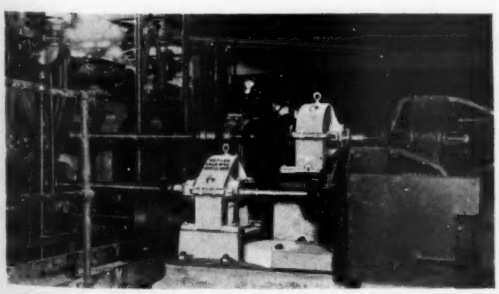
FIVE of the WESTERN HERRINGBONE SPEED REDUCERS driving the couch, press sections and in-going seal rolls of the Minton Vacuum Dryer, Longview Fibre Company's kraft paper mill at Longview, Washington.

From COUCH *to* REEL

SMOOTH, DEPENDABLE DRIVING POWER

TEN WESTERN HERRINGBONE SPEED REDUCERS ranging from 30 to 85 H.P. were selected by the LONGVIEW FIBRE COMPANY for the new General Electric Sectional Drive on the Minton Vacuum Dryer paper machine recently installed. WESTERN REDUCERS were chosen on the basis of the satisfactory performance of many units, which have been running with no more attention than occasional oiling since the mill started in June, 1927.

Dependable, trouble-free operation coupled with service instantly available from the WESTERN GEAR WORKS' nearby plants, have made WESTERN SPEED REDUCERS the choice of Pacific Coast pulp and paper mills. WESTERN makes every type of speed reducer and fully guarantees design, quality and service.



WESTERN HERRINGBONE SPEED REDUCERS on the outgoing seal rolls of the Minton Vacuum Dryer, Longview Fibre Company's kraft paper mill, Longview, Washington.

"Get Your Gears from Gear Specialists"

Western Gear Works
SEATTLE, WASH.
Associated with **PACIFIC GEAR & TOOL WORKS** Incorporated
SAN FRANCISCO PORTLAND EL PASO LOS ANGELES

WESTERN GEARS

WILLIAMS STANDARD PAPER MOISTURE TESTER

An Accurate Moisture Test of Your Paper in Ten Minutes

One Paper Company Has Bought 21 for Their Various Mills

Moisture tests can be made in your Machine Room by your Machine Tenders.

No calculations required. Accurate to .1 of 1%.

Tests all kinds of paper from tissue to board.

Hot samples weighed without removal from oven. No chance for moisture absorption during weighing.

Double-walled electric drying oven, with thermostat control.

Accurate scales with non-rusting agate bearings and beam graduated to read percent moisture directly.

Over-dried Paper Costs You More Dollars Per Ton and Dissatisfied Customers

WILLIAMS APPARATUS COMPANY

WATERTOWN, N. Y.

Ray Smythe

REPRESENTING
OUTSTANDING NATIONALLY KNOWN MANUFACTURERS OF FIRST QUALITY PULP AND PAPER MILL, SAWMILL AND INDUSTRIAL EQUIPMENT

Pulp and Paper Making Machinery

Barkers—Barking Drums—Chippers
Artificial Pulpstones—Grinders
Chip Screens—Sulphur Burners
Riveted and Welded Digesters
(Rotary and Stationary)
Perforated Stainless Blow Pit Bottoms
Stainless Steel Castings,
Tubular and Plate Products
Wet Machines—Savealls—Deckers
Thickeners—Washers—Flat Screens
Perforated Screen Plates—Jordans and Fillings
Sizing Systems
Stock, Water, Condensate and Vacuum Pumps
Stock and Regulating Valves
Steam Specialties—Steam Accumulators
Corrosion Resistant Paints and Enamels
Electric Motors (Polyphase)
Recording Instruments
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Steam Circulating Systems
Calendar Stacks—Chilled Iron Rolls
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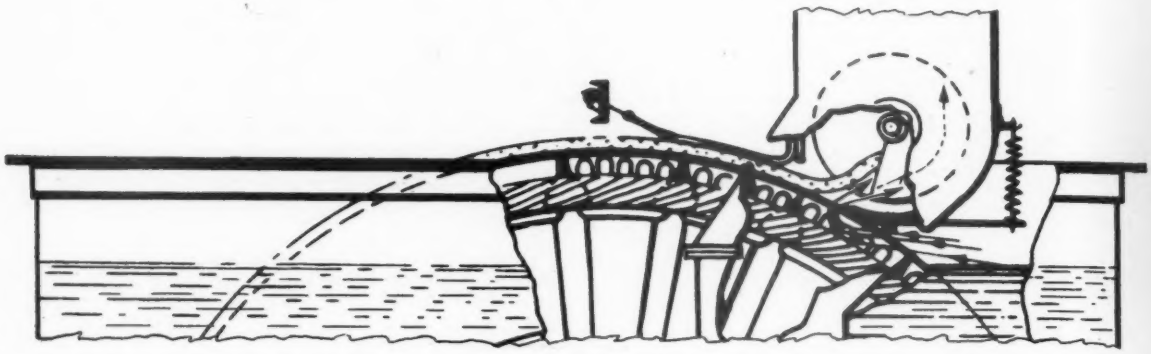
Creosoting Retorts and Wood Cookers
Industrial Car Wheels
Miscellaneous Plate and Machine Work
Complete Sawmill Machinery

RAY SMYTHE
MANUFACTURERS' AGENT
301 PARK BUILDING TELEPHONE BEACON 0502
PORTLAND, OREGON

» » » Pulp and Paper Mills Are Buying *the New* VACUUM SHEET DISCHARGER



FROM Washington to Wisconsin, from California to Quebec, paper mills are putting in the new Oliver Vacuum Sheet Discharger.

No one is buying new equipment today unless the equipment makes a saving by reducing operating costs. The vacuum sheet discharger does save by cutting down fibre loss, by enabling you to increase capacity and save time, and by reducing maintenance charges.

No Wear on Wires

The Oliver Vacuum Sheet Discharger removes the sheet solely by vacuum. There is no mechanical action in scraping the sheet from the drum. Less attention is required. The life of the wire cover is materially increased.

Take advantage of these savings in your mill. Our nearest office will send you details.

OLIVER UNITED FILTERS INC.

SAN FRANCISCO
Federal Reserve Bank Bldg.

NEW YORK
33 West 42nd Street

PARIS

CHICAGO
221 North La Salle Street

TORONTO
330 Bay Street

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RECIFE, BRAZIL Ayres & Son
JOHANNESBURG — E. L. Bateman, Pty., Ltd.
STOCKHOLM — T. An Tesch

FACTORIES: Oakland, Cal., Hazleton, Pa., Peterboro, England. Cable Address: OLIUNIFILT

When writing to OLIVER UNITED FILTERS INC. *please mention* PACIFIC PULP AND PAPER INDUSTRY

Aerial View of the New 175-Ton Weyerhaeuser Timber Company's Sulphite Pulp Mill, Longview, Washington

SIX MILLS IN ELEVEN YEARS

CHRIS KUPPLER'S SONS

ARE EXPERIENCED IN PULP AND PAPER MILL CONSTRUCTION

Contractors For—

WASHINGTON PULP & PAPER CO.
Port Angeles, Wash.

RAINIER PULP & PAPER COMPANY
Shelton, Wash.

GRAYS HARBOR PULP & PAPER CO.
Both Units—Hoquiam, Wash.

NATIONAL PAPER PRODUCTS CO.
Second Unit—Port Townsend, Wash.

OLYMPIC FOREST PRODUCTS CO.
Port Angeles, Wash.

Pulp Division
WEYERHAEUSER TIMBER CO.
Longview, Wash.

CHRIS KUPPLER'S SONS have, as general contractors, constructed SIX of the Pacific Coasts modern pulp and paper mills within the past ELEVEN YEARS.

The knowledge gained of pulp and paper mill construction problems qualifies CHRIS KUPPLER'S SONS for handling the industry's most difficult building jobs.

O. A. KUPPLER **W. R. KUPPLER** **H. B. KUPPLER**

CHRIS. KUPPLER'S SONS

SPECIALIZING IN PULP & PAPER MILL CONSTRUCTION

GENERAL BUILDING CONTRACTORS

Established 1889

General Offices: **PORT ANGELES, WASH.**

TYPICAL STAND WESTERN FIR

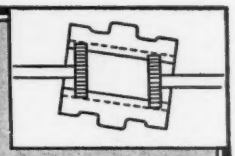
Hawley Pulp and Paper Company

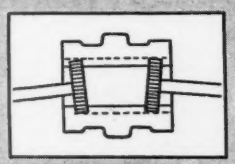
Paper Manufacturers

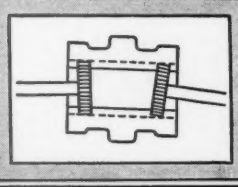
Oregon City, Oregon

NEWSPRINT
COVER PAPERS
SULPHITE WRAPPINGS
TISSUES · TOWELS · NAPKINS
SULPHITE and GROUNDWOOD
SPECIALTIES

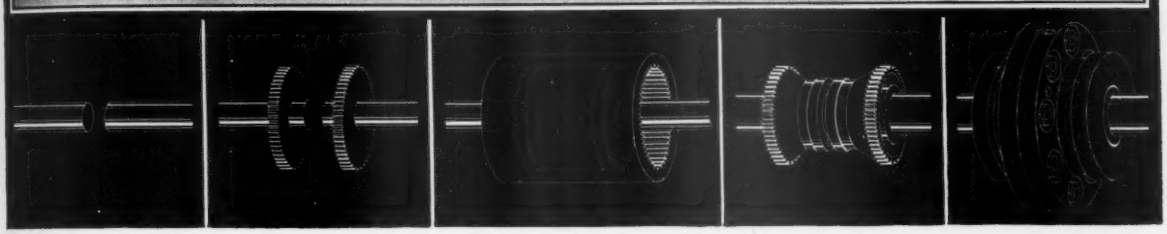
See How FAST'S let you say Good-Bye to COUPLING SHUT-DOWNS







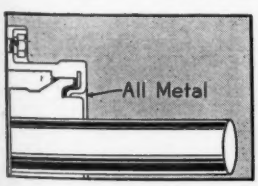
These exaggerated diagrams show how all forms of misalignment are compensated for between the lubricated faces of the gear teeth. Note how the entire assembly rotates as a unit.



THE diagrams will show you how Fast's Coupling does away with all flexible pins, grids, washers, discs, or springs. And by substituting the simple mechanical assembly illustrated, for parts that might fatigue and breakdown, Fast's has made coupling shut-downs, and losses from them, a thing of the past.

How simply Fast's Coupling works! Shaft misalignment is compensated for between the lubricated teeth of generated gears. Oil carries the load. Nothing to wear. Nothing to flex, fatigue or fail. Not a part that must be replaced periodically with attendant loss of time. Just oil Fast's Self-Aligning Coupling from time to time like any other piece of transmission machinery, and it will last as long as the connected machines—with no possibility of shut-downs.

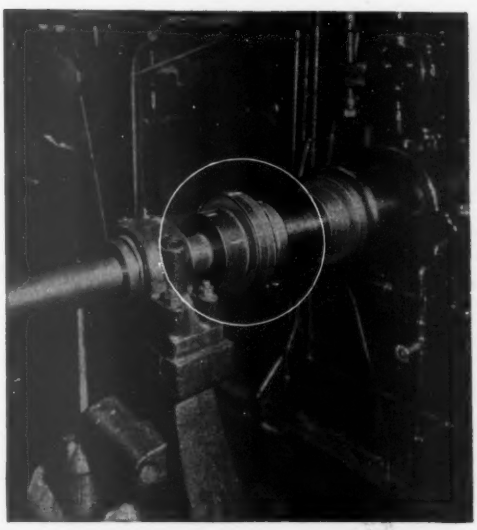
Specify Fast's Couplings on all new equipment for your plant. It will free you from coupling trouble. Write for catalog showing a Fast's Coupling for almost every need of industry.



Permanently Dust Proof

Not a single flexible material, not a single rubber or felt washer is used in Fast's Coupling. All metal to metal contact prevents dust, grit, fumes or moisture from getting into the working assembly. Due to this exclusive Fast's principle, Fast's Couplings never cause shut-downs because of internal wear due to foreign substances.

Above is shown the simple development of Fast's Self-Aligning Coupling. A spur gear on each shaft end, a sleeve with internal gears to mesh. Oil in the sleeve carries the load.

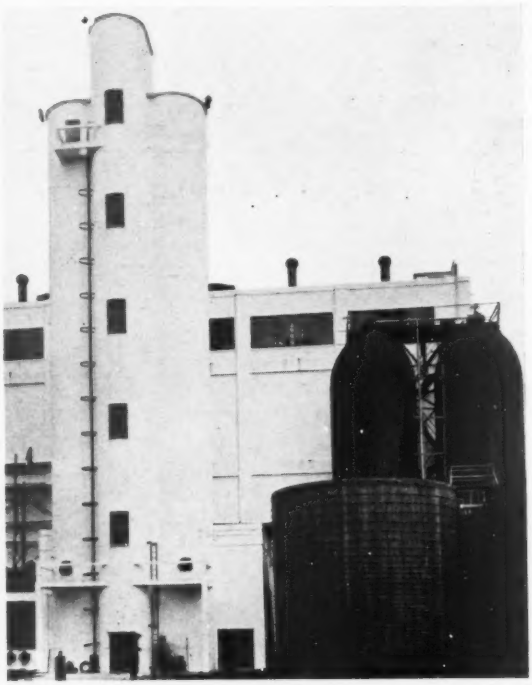


Fast's Self-Aligning Coupling at the Camas Mill, Crown-Willamette Paper Co., Camas, Washington.

FAST'S *Self Aligning* COUPLINGS

THE BARTLETT HAYWARD COMPANY

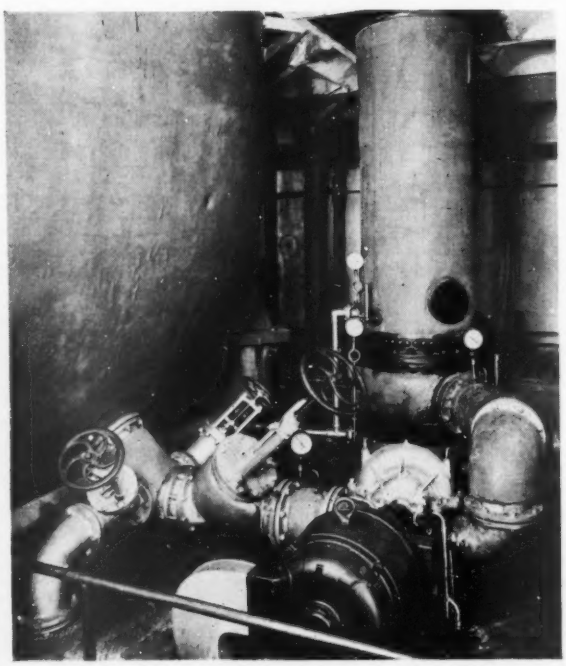
SCOTT & McHENRY STS., BALTIMORE, MD.



133
Jenssen Two Tower Acid Systems
Now in Operation

The JENSSEN METHOD of filtering acid removes all dirt picked up from the lime rock, and delivers the acid to the digester entirely free from all foreign matter.

JENSSEN - BROBECK SULPHITE SYSTEM



The Outside Heating and Circulating System that is Revolutionizing Sulphite Cooking

G. D. JENSSEN CO.

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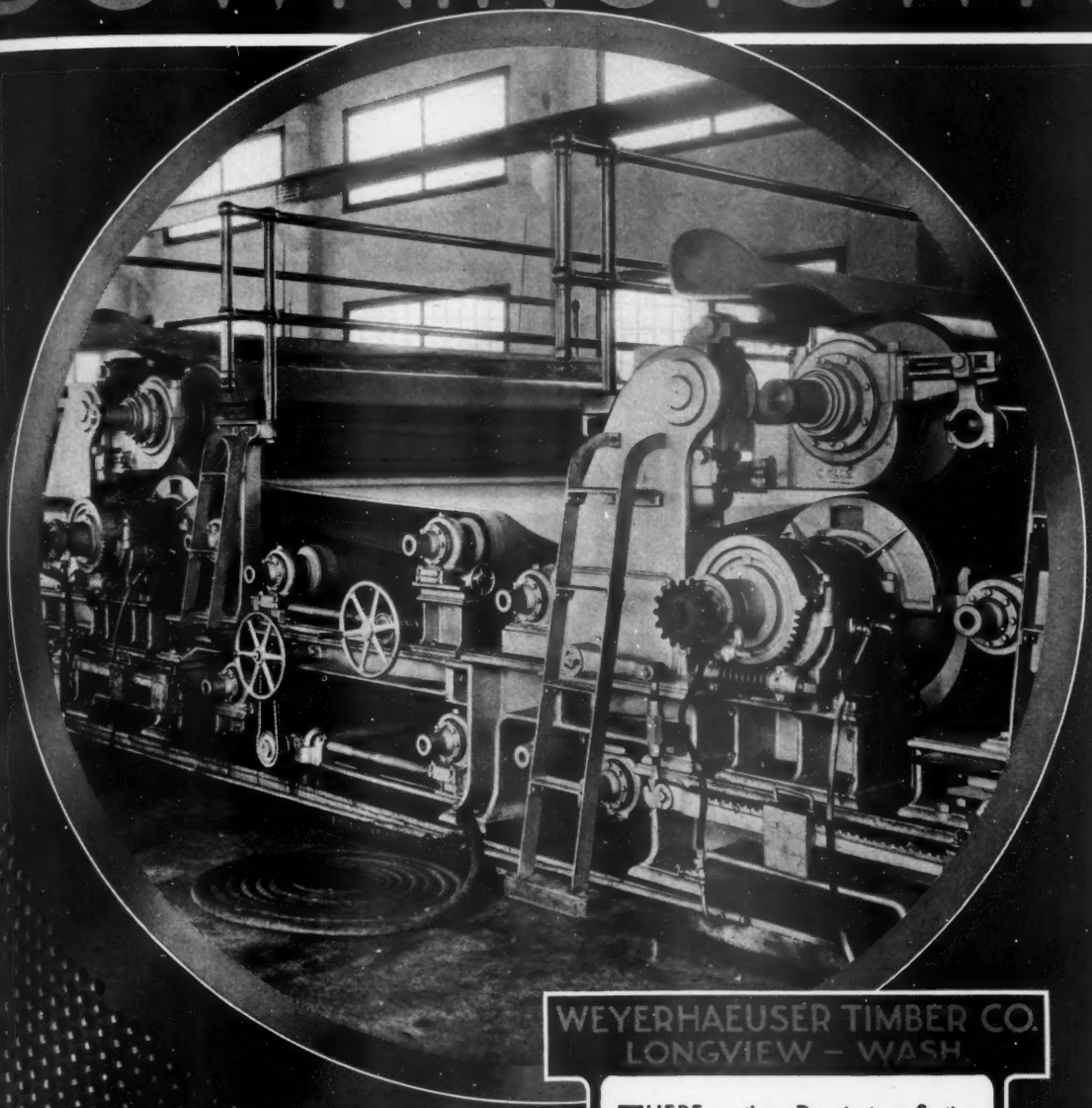
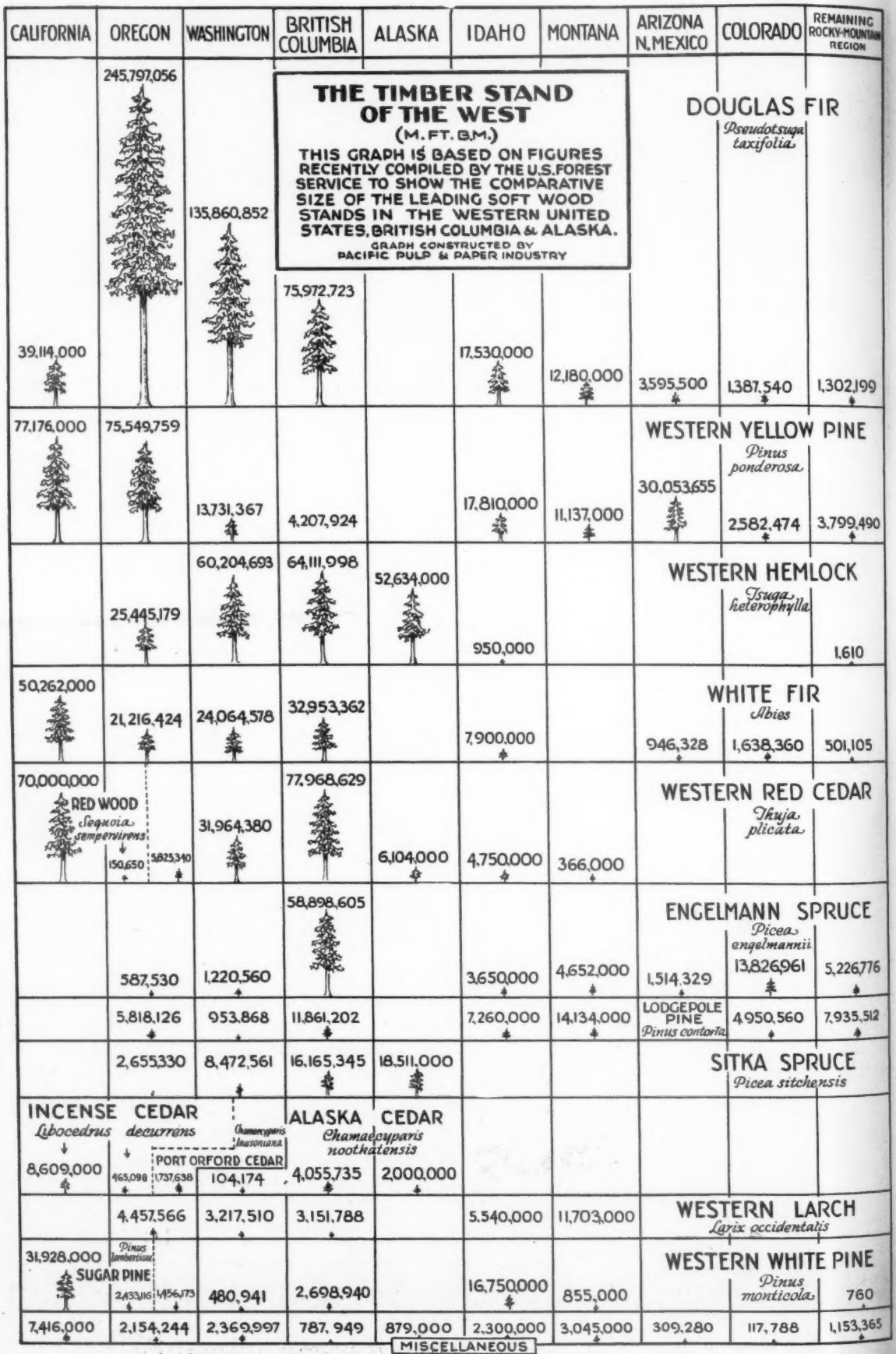
DOWNINGTOWN



WEYERHAEUSER TIMBER CO.
LONGVIEW — WASH

THERE are three Downingtown Suction Rolls on this machine, a 30-inch couch, a 28-inch first press, and a 28-inch second press. These rolls have direct drive and rear end suction ⁂ The rear end suction simplifies the piping and eliminates the necessity of breaking and re-making joints in vacuum piping when putting on clothing ⁂ The rolls are fitted with trouble-proof, self-aligning, ring-oiling, water-cooled, anti-friction journal type bearings. The Downingtown Mfg. Co., Downingtown, Pa.


THE TIMBER STAND OF THE WEST
(M. FT. B.M.)
THIS GRAPH IS BASED ON FIGURES RECENTLY COMPILED BY THE U.S. FOREST SERVICE TO SHOW THE COMPARATIVE SIZE OF THE LEADING SOFT WOOD STANDS IN THE WESTERN UNITED STATES, BRITISH COLUMBIA & ALASKA.
GRAPH CONSTRUCTED BY PACIFIC PULP & PAPER INDUSTRY
CALIFORNIA
OREGON
WASHINGTON
BRITISH COLUMBIA
ALASKA
IDAHO
MONTANA
ARIZONA N. MEXICO
COLORADO
REMAINING ROCKY-MOUNTAIN REGION
DOUGLAS FIR
Pseudotsuga taxifolia
39,114,000
245,797,056
135,860,852
75,972,723
17,530,000
12,180,000
3,595,500
1,387,540
1,302,199
WESTERN YELLOW PINE
Pinus ponderosa
77,176,000
75,549,759
13,731,367
4,207,924
17,810,000
11,137,000
30,053,655
2,582,474
3,799,490
WESTERN HEMLOCK
Tsuga heterophylla
25,445,179
60,204,693
64,111,998
52,634,000
950,000
1,610
WHITE FIR
Abies
50,262,000
21,216,424
24,064,578
32,953,362
7,900,000
946,328
1,638,360
501,105
RED WOOD
Sequoia sempervirens
70,000,000
150,650
5,823,340
31,964,380
77,968,629
6,104,000
4,750,000
366,000
WESTERN RED CEDAR
Thuja plicata
ENGELMANN SPRUCE
Picea engelmannii
587,530
1,220,560
58,898,605
3,650,000
4,652,000
1,514,329
13,826,961
5,226,776
LODGEPOLE PINE
Pinus contorta
5,818,126
953,868
11,861,202
7,260,000
14,134,000
4,950,560
7,935,512
SITKA SPRUCE
Picea sitchensis
2,655,330
8,472,561
16,165,345
18,511,000
INCENSE CEDAR
Libocedrus decurrens
Chamaecyparis lawsoniana
PORT ORFORD CEDAR
8,609,000
465,098
1,737,638
104,174
ALASKA CEDAR
Chamaecyparis nootkatensis
4,055,735
2,000,000
WESTERN LARCH
Larix occidentalis
4,457,566
3,217,510
3,151,788
5,540,000
11,703,000
SUGAR PINE
Pinus lambertiana
31,928,000
2,433,116
1,456,173
480,941
2,698,940
16,750,000
855,000
WESTERN WHITE PINE
Pinus monticola
760
7,416,000
2,154,244
2,369,997
787,949
879,000
2,300,000
3,045,000
309,280
117,788
1,153,365
MISCELLANEOUS

"To the Eight Percent"

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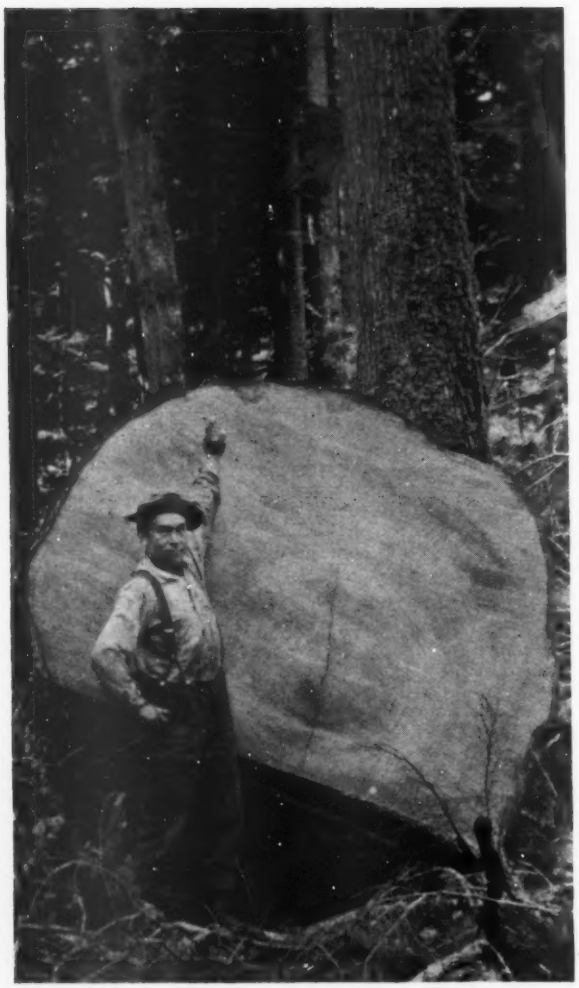

A Giant Sitka Spruce of Western Washington

REVIEW NUMBER

PACIFIC PULP and PAPER INDUSTRY

Volume 6
Number 5

MILLER FREEMAN, President L. K. SMITH, Manager LLOYD E. THORPE, Editor HARLAN SCOTT, Advertising Manager

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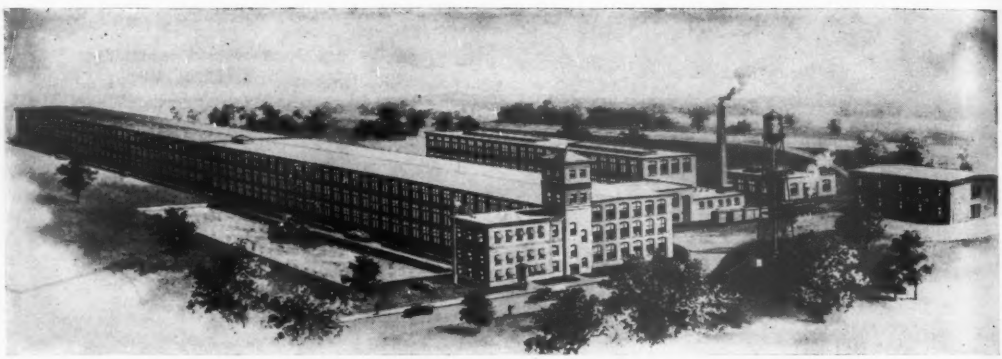
The plant and townsite of Pacific Mills Ltd., at Ocean Falls, B. C.



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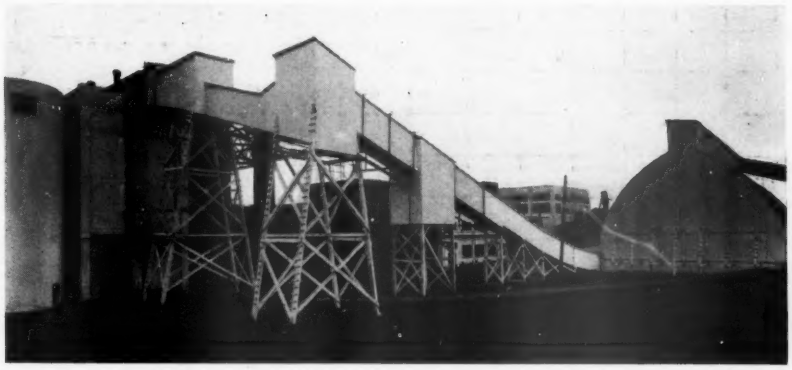
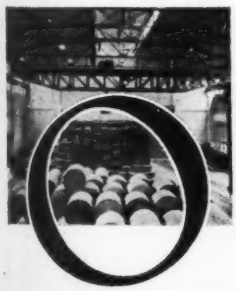


R·E·V·I·E·W

Developments in the pulp and paper industry of the Pacific Coast in nineteen thirty-one



ONE of the best things that can be said about 1931 is that it is a good year to look back upon. Emphasis in that opening sentence is to be found in the direction of the "look". Most of us are glad that 1931 is behind us. However, it is unfair, in any review of the past year, famous for depression, to charge everything to loss and nothing to profit.

Compared with records established in the years immediately preceding, developments in the way of new tonnage for 1931 were small. Price declines were severe throughout the industry, wage reductions were general, consumption was low and mill operations were generally at a reduced level. Dividends were in most cases curtailed or omitted. Buying was on a hand-to-mouth basis and customers were critical. Mill operation difficulties were increased by the many additional problems imposed in attempting to operate at a profit on a declining and uncertain market.

On the other hand, the industry as a whole profited by the inauguration of economies all down the line, made necessary by the rigors of the market. It cannot be doubted that production costs during the year were reduced by a very substantial percentage. Quality of product was generally improved in attempts to get out of the more competitive markets, new grades were developed, and new uses for paper were discovered.

The only major new construction of Pacific Coast tonnage logically falling within the calendar year 1931, was the completion of the new 175-ton high grade bleached sulphite pulp mill of the Weyerhaeuser Timber Company at Longview, Washington. This new mill set a progressive pace in design and operation. Secondly, but aside from the technical aspects, the building of this modern plant marks the entry into the pulp field of one of the world's largest timber owning and lumber manufacturing companies.

Altho the Weyerhaeuser mill was the only complete new plant of primary tonnage to be constructed during the year, there were a number of other projects brought to completion. At Powell River, B. C., the Powell River Company, Ltd., completed installation of its No. 7 newsprint machine, new groundwood plant and power developments. The St. Helens Pulp & Paper Company, at St. Helens, Oregon, installed machine No. 2 for manufacturing kraft wrapping paper and specialties. The Longview Fibre Company, at Longview, Washington, installed a small paper machine equipped with a vacuum dryer. The Olympic Forest Products Company added one digester to its bleached sulphite pulp mill. The Crown Willamette Paper Company completed the last touches on a comprehensive mill improvement and expansion program at Camas, Washington. The Inland Empire Paper Company of Millwood, Washington, made a number of substantial plant improvements and added some buildings, but added no tonnage-increasing equipment. The Paraffine Companies, Inc., at Oakland, California, completed a unit,

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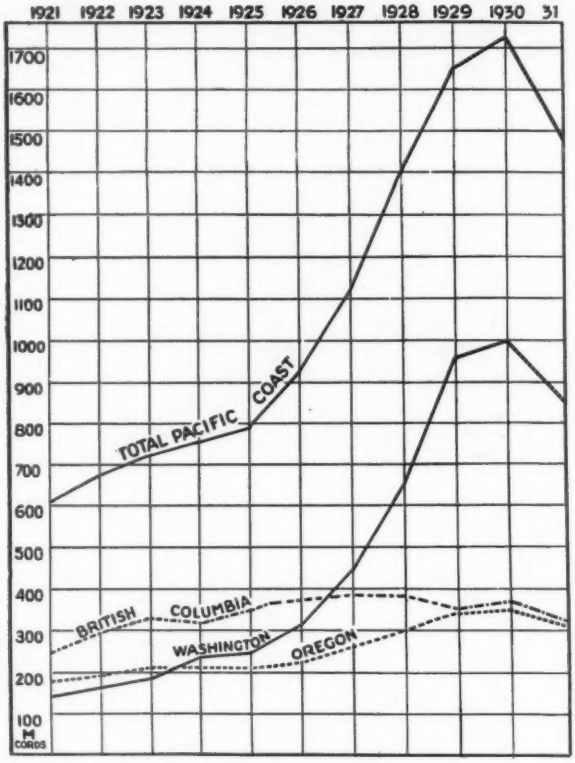


PULPWOOD CONSUMPTION—1921-1931
Pacific Coast States and British Columbia

the first on the Pacific Coast, for the manufacture of inlaid linoleum. The Hawaiian Cane Products Company constructed a modern insulating board plant in the Hawaiian Islands for the manufacture of insulating materials from sugar cane bagasse.

These were the major projects. In addition, there were interesting developments in the converting field. Some new plants were built for existing factories, while other distinctly new units were added to Pacific Coast production.

Generally reduced consumption and declining prices served as a double incentive to improve mill operation technique and to improve quality. In addition to a general tightening up of mill methods, there were some interesting developments new in character. One of these was the more general adoption of the new alloy steels for meeting the problems of corrosion and excessive wear in the pulp-paper processes. There were new developments in pumping practice, consistency regulation and control, and in methods of applying technical control. One interesting development that has been watched with interest is that installed in a British Columbia mill to bark the large sized logs, 20 inches or more in diameter, common to the Pacific Coast.

The close relations existing in the Pacific Northwest between the pulp and paper mills and the lumber industry, brought about some new problems in 1931. The further severe decline in logging and lumbering activity during the year developed a shortage in the available supply of sawmill waste for pulp chips and hogged fuel, and of logs for breaking down into pulpwood.

Although shutdown of camps shortened the available supply of logs, such shutdown had apparently no effect on wood prices. The existing surplus of labor turned to the production of hand cut cordwood and the result was the quick development of new source of supply for the pulp mills. Competition for cash forced the cordwood prices down during the year to extremely low levels. Whether this cordwood supply, produced chiefly by the small contractors, will continue as a permanent institution with a betterment in the lumber industry and a decrease in unemployment is something to be watched with interest during the current year.

Reduced consumption of paper and the general sluggishness in business necessitated curtailed operating schedules during the year, practically without exception. This curtailment ranged in form from complete long shutdowns to short-week operations. Various expedients were instituted to take care of the employment problem, such as staggering of shifts, reduction of shift hours, etc. Wage reductions were general throughout the industry during the year.

The unsatisfactory paper market forced a general movement out of highly competitive items into the specialty grades. With ingenuity thus stimulated some new products were brought into the market. The substance of these changes was to increase the variety of paper manufactured on the Pacific Coast and to improve the regional position of the industry. Examples of these changes may be cited in the following random examples: Pacific Coast Paper Mills brought out a new multi-purpose bathroom tissue; Crown Willamette Paper Company at its Camas mill greatly enlarged the number of specialty items on the schedule: St. Helens Pulp & Paper Company began production of a number of new kraft specialty items; Grays Harbor Pulp & Paper Company expanded its line to provide specialties for its new converting plant.

The market for Pacific Coast pulp was seriously disturbed during the year. Continued pressure of foreign pulp in the domestic market caused severe price declines of a steady nature during the first nine months of the year, but with the general abandonment of the gold standard by the leading pulp exporting nations in the Fall and the consequent depreciation in exchange ranging from 15 to 30%, pulp prices dropped more precipitately to levels well below the cost of domestic manufacturers. Competition with imported pulp sold in

PULP WOOD CONSUMPTION—1921-1931
Pacific Coast States and British Columbia

	1921 Tons	1923 Tons	1924 Tons	1925 Tons	1926 Tons	1927 Tons	1928 Tons	1929 Tons	1930 Tons	1931† Tons
Washington	149,699	191,751	230,299	241,150	305,787	455,664	651,657	956,132	1,000,001	850,000
Oregon and California	192,869	205,199	205,968	209,349	232,989	267,233	308,264	340,745	351,053	310,000
British Columbia*	203,000	267,000	266,000	284,100	318,500	364,000	383,008	352,444	373,397	330,000
Total Pacific Coast	545,568	663,930	702,267	734,599	857,276	1,076,899	1,342,929	1,649,321	1,724,451	1,490,000

Source—U. S. figures from U. S. Dept. of Commerce, Bureau of Census; B. C. figures from Dept. of Lands, Forest Branch; and Dominion Bureau of Statistics.
*British Columbia figures prior to 1928 are not shown separately and are estimated on basis of 1.23 cords of wood consumed per ton of wood pulp produced.
†Estimated.

the United States with the advantage of depreciated exchange was the most serious factor that domestic producers had to contend with, bringing about a situation which seriously threatened extinction of a considerable portion of the domestic industry.

The competitive pulp market aroused new demands for protective legislation, first to equalize the advantage of depreciated exchange, and second to revive the entire subject of tariff protection for all parts of the pulp and paper industry, bringing into the protective group both pulp and newsprint which for many years have been on the free list.

In quality Pacific Coast pulp made notable advances in the market during the year, winning a wider acceptance in the highest grade paper mills. Increased attention was turned during the year to pulps for cellulose uses other than for paper. The Rainier Pulp and Paper Company has now turned its entire production to a high grade bleached sulphite pulp for use in the manufacture of rayon and cellophane. Laboratory tests in other mills have been enlarged to study fibre characteristics for uses other than paper and it is entirely possible that coming years will see more Pacific Coast pulp tonnage turned to purely cellulose uses.

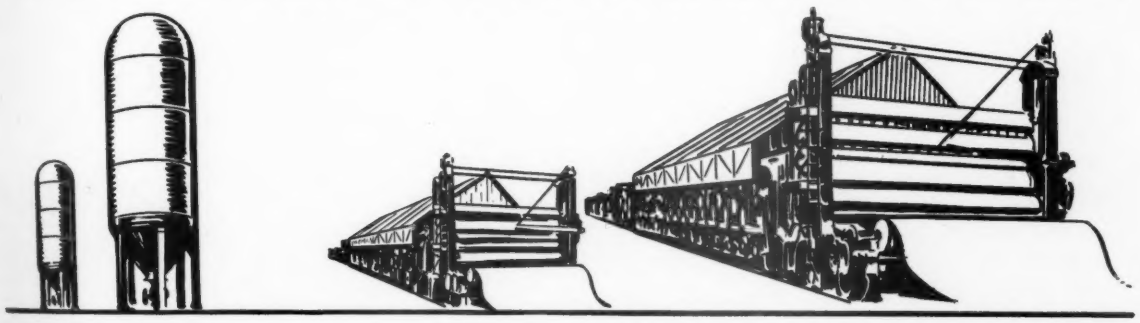
Altho the rigid character of rail rates prevented any sagging during the year, this condition did not hold for that other transportation avenue that Pacific Coast pulp-paper products may take to market, the water route. Disruption of intercoastal shipping due to very severe competition for tonnage forced cargo rates to new low levels. Whereas $6 per ton for pulp in bales occupying 51 cu. ft. or less per ton had prevailed on shipments from Pacific Coast ports to the Atlantic seaboard, this rate came down to $5 during the year and the baling requirements were made less stringent, compression to 60 cu. ft. per ton being held sufficient. This was a published rate, but "inside" rates on better terms were reported.

An increasing tonnage movement by truck was reported. The truck shipments were confined to paper shipments, particularly short haul stuff from mill to Pacific Coast distributing points. A number of advantages were held out for the trucks in this class of transportation, such as mill-door to store-door movement, greater speed, and lower cost.

Toward the end of the year the Pacific Coast pulp producers joined in a movement to secure an advantage equal to that now enjoyed by foreign shippers on backhaul movements of pulp from the Atlantic ports to inland mill points. As it has been, the imported pulp has moved inland on an import rate which generally has been $1 per ton lower than the rate applicable to domestic pulp arriving at identical Atlantic ports in intercoastal bottoms. The action initiated by the Coast pulp manufacturers sought to remove this $1 differential.

There were no mergers or changes of management on the Pacific Coast during 1931, except the acquisition of the defunct Cascade Paper Company by the Everett Pulp & Paper Company of Everett. The latter operates a three-machine book paper mill. The Cascade mill is now known as the West Tacoma division of the Everett company. The Cascade plant, idle for about two years, is a two-machine book paper mill, with its own soda pulp plant. The Everett company has not

COMPARATIVE GROWTH OF PACIFIC COAST PULP and PAPER INDUSTRY—1923-1931



1923 1931 1923 1931

Total Daily Capacity All Grades of Pulp
1923—2,045 tons
1931—5,410 tons.

Total Daily Capacity All Grades of Paper and Board
1923—2,056 tons.
1931—4,499 tons.

WOODPULP PRODUCTION—1921-1931

Pacific Coast States and British Columbia
(Tons of 2,000 lbs.)

	1921 Tons	1923 Tons	1924 Tons	1925 Tons	1926 Tons	1927 Tons	1928 Tons	1929 Tons	1930 Tons	1931† Tons
Washington	95,161	136,943	159,539	161,858	199,164	268,349	348,107	523,948	566,137	480,000
Oregon and California	124,494	162,653	149,894	160,736	178,841	200,869	213,407	256,546	248,952	200,000
British Columbia	164,746	217,076	216,243	230,733	259,504	296,253	310,961	304,619	335,429	280,000
Total Pacific Coast	384,401	516,672	525,676	553,327	637,509	775,471	873,475	1,085,113	1,150,518	960,000

Source—U. S. figures from U. S. Dept. of Commerce, Bureau of Census; B. C. figures from Dept. of Lands, Forest Branch; and Dominion Bureau of Statistics.
†Estimated on production of previous year, adjusted to include new tonnage and general reduced operations in industry as a whole.

Photo by Blank-Stoller Inc.

R. B. WOLF
Manager, Weyerhaeuser Timber Company, Pulp Division

operated the Cascade plant as yet, nor has it announced any plans in that direction.

The Pacific Section of TAPPI held two interesting meetings during 1931. The first session was held at Everett, Washington, in April and an instructive program was presented under the direction of the Section Chairman, C. W. Morden. This session was well attended. Parts of the day were given over to visits to the two local mills, the book paper plant of the Everett Pulp & Paper Company, and the newer sulphite pulp mill of the Puget Sound Pulp & Timber Company.

The Section held its Fall meeting at Powell River, British Columbia, with the helpful cooperation of the Powell River Company, Ltd. This meeting, held in October, called out a smaller attendance than the Spring meeting, due largely to the distance it was necessary to travel.

At the Fall meeting Ralph Hansen, technical director of the Weyerhaeuser Timber Company, was elected Pacific Section Chairman. Three vice-chairman, chosen on a regional basis, were elected: for British Columbia, Harry Andrews, chief chemist of the Powell River Company; for Puget Sound region, James P. V. Fagan, assistant superintendent of the Puget Sound Pulp & Timber Company; for Columbia River and South, Ray Schadt, technical director of the Hawley Pulp & Paper Company. E. G. Drew, Portland, Pacific Coast resident engineer for the J. O. Ross Engineering Corporation, was elected secretary-treasurer.

Further advances in promoting safe practice in Pacific Coast mills was made in 1931. The outstanding event in this field was the holding of the second annual safety conference for all Pacific Coast mills. This event was staged in February at Powell River, B. C., under the direction of Robert H. Scanlon, Powell River director and assistant manager, with the Powell River Company acting as host.

One result of this conference was to establish a "safety shield" contest in the British Columbia group of mills, competition being on an annual basis. The British Columbia Pulp & Paper Company donated the trophy.

The mills in the state of Washington continued to carry on their intrastate competition. In Oregon steps were taken to rewrite the industrial code for the state as applying to paper mills, and improved coordination effort was brought about in the appointment of E. R. Brown, former safety director for the Crown Willamette Paper Company, as general manager of the Columbia Basin Division of the National Safety Council.

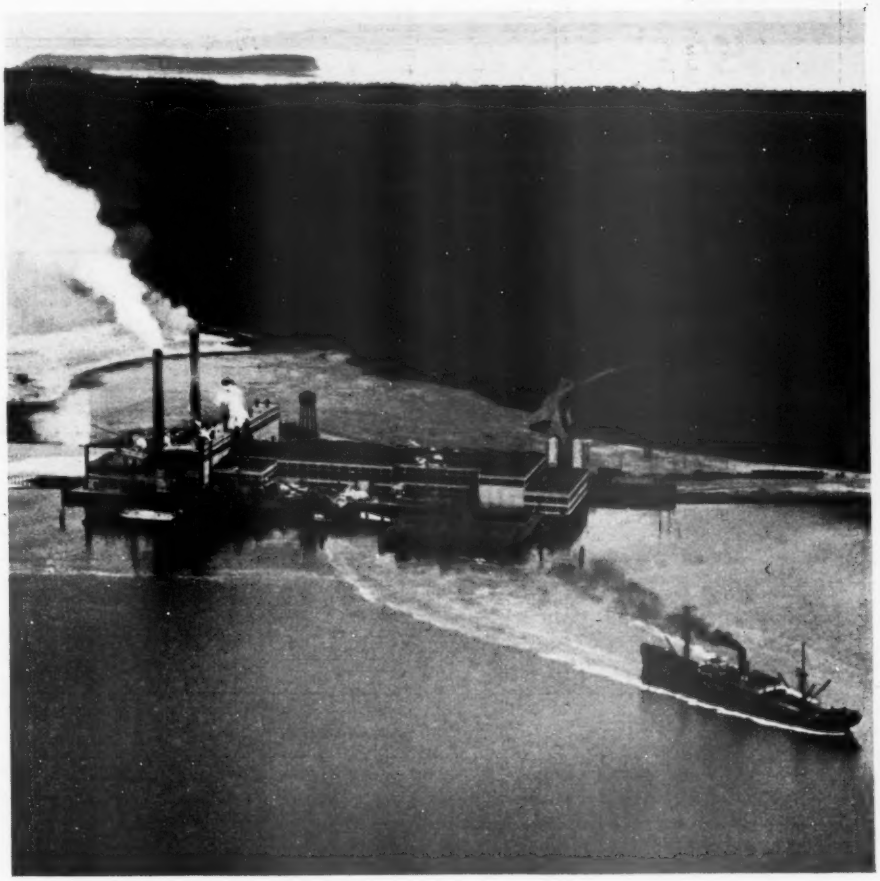
As the year closed, pulp and paper developments in Alaska appeared to be as remote as ever. Altho two timber and water power concessions have been held for several years and preliminary timber cruises and power surveys have been made, from the market standpoint the year was decidedly unfavorable for launching any new project of major character, such as would be necessary in an Alaskan development. These unfavorable conditions served to hold both projects at a standstill. The most significant event was the formal protest by the American Paper and Pulp Association to the federal government opposing any present development of Alaskan pulpwood.

What for a time appeared to be another possible western pulp and paper development came about with the application of the International Paper Company for pulp timber limits in the Colorado region of the Rocky Mountains. While the comany was reticent to discuss

PACIFIC COAST
Growth Summary of Pulp Mill Development

Name of Mill—	Location:	Original Capacity (Tons per 24-hour day)	Present Capacity (Tons per 24-hour day)	Year of Beginning Production
Puget Sound Pulp & Timber Co., Anacortes division (formerly Fidalgo Pulp Manufacturing Co.)	Anacortes	20	60	1925
Puget Sound Pulp & Timber Co., Bellingham division (formerly San Juan Pulp Manufacturing Co.)	Bellingham	50	100	1926
Rainier Pulp & Paper Co.	Shelton	135	150*	1927
Spaulding Pulp & Paper Co.	Newberg	50	75	1927
Shaffer Box Co.	Tacoma	50	50	1928
St. Regis Kraft Co. (formerly Union Bag & Paper Power Corp.)	Tacoma	160	160**	1928
Grays Harbor Pulp & Paper Co.	Hoquiam	150	150†	1928
Sitka Spruce Pulp & Paper Co.	Empire	50	50	1929
Olympic Forest Products Co.	Port Angeles	175	175	1930
Puget Sound Pulp & Timber Co.	Everett	175	175	1930
Weyerhaeuser Timber Co.	Longview	175	175	1931

*Rayon pulp.
**The St. Regis mill is the only one in this listing making kraft pulp. All others are sulphite.
†Uses 50 tons of pulp in its own paper mill.



PORT TOWNSEND, WASHINGTON
The 200-ton kraft pulp and paper mill of the National Paper Products Company

plans relative to this pulpwood concession, it was generally supposed to be a newsprint development. In all, the project came to naught for, after some months of investigation, the company relinquished its rights.

Some interesting company problems not germane to mill operation developed during the year. Perhaps the most outstanding was the suit instigated against the Rainier Pulp and Paper Company by a number of oyster growers who claimed damage to their oyster beds caused by the pulp mill's discharges into the relatively shallow bays of the vicinity. The company threatened to close the mill but in an unusual burst of civic spirit the community of Shelton raised $166,000 and effected a compromise with the oyster growers, thus permitting the mill to continue operations at its present site with some changes in the liquor disposal system.

In Salem, Oregon, the Oregon Pulp and Paper Company was threatened with action for maintaining a cinder nuisance, but this condition was remedied by the installation of suitable equipment. This same company in requesting vacation of a street for proposed mill expansion encountered stiff opposition from a local faction for a time but finally succeeded in winning its case. The year was also notable for some brushes between mill companies and tax levying bodies.

An influx of European newsprint into the Pacific Coast market, particularly during the last months of the year, brought about the toughest newsprint market conditions in the entire United States. Newsprint prices had declined from the previous year's price of $63.50 per ton to $58.00 but were further reduced during the year to $50.00 per ton. These quotations made by Pacific Coast mills in both Canada and the United States, were severely underbid by Scandinavian producers who during the closing months of the year effectively used their depreciated exchange in bringing newsprint prices down to below $40.00 per ton delivered at Pacific Coast ports.

Reduced activity in the wood-using industries brought forestry laws into new light. Washington's new reforestation law, which provides a low annual tax per acre for classified reforesting lands, became effective during the year, following the earlier example of Oregon. While reduced income resulting from lower commodity prices limited the funds which could be turned to long term timber investments and reforestation work, there was on the other hand a noticeable revival of discussion among leaders concerning the value of the forest industries to the region and the necessity for working out some permanent plan for safe-guarding these values.

PULP AND PAPER CAPACITIES OF PACIFIC COAST MILLS

Showing principal grades manufactured and capacities in tons per 24-hour day on Dec. 31, 1931

Name of Mill	Location	—PULP— Mechanical	Unbleached Sulphite	Bleached Sulphite	Sulphate	Soda	—PAPER— News	Sulphites	Sulphates	Book	Board	Others	REMARKS
BRITISH COLUMBIA													
British Columbia Pulp & Paper Co.	Woodfibre		120										
British Columbia Pulp & Paper Co.	Swanson Bay												Mill Idle.
British Columbia Pulp & Paper Co.	Port Alice			120									
Canadian Forest Products, Ltd.	Beaver Cove												Mill Idle.
Pacific Mills, Ltd.	Ocean Falls	195	65		60		200	50	60				News, Kraft and Sulphite Wrapping, fruit wrap, tissues, etc.
Powell River Co., Ltd.	Powell River	500	150				650						Newsprint.
Sidney Roofing & Paper Co.	Victoria	10									25		Roofing and boards.
Vancouver Kraft Mills, Ltd.	Port Mellon				100								Construction temporarily suspended.
Westminster Paper Mills, Ltd.	New Westminster							25					Fruit wrap, tissues and specialties.
WASHINGTON													
Berkheimer Mfg. Co., J. E.	Tacoma											8	Rag roofing, etc.
Columbia River Paper Mills	Vancouver	30	110					110					All grades sulphite wrapping.
Crown Willamette Paper Co.	Camas	90	200	100	100			350	60				Bleached specialties and tissues.
Everett Pulp & Paper Co.	Everett					50				75			M. F. and S. C. Book, railroad writing.
Everett Pulp & Paper Co. (Successors to Cascade Paper Co.)	West Tacoma					25				50			Mill idle.
Fibreboard Products, Inc.	Port Angeles	30	50								75		Spruce and chip board.
Fibreboard Products, Inc.	Sumner										50		Chip and Container Board.
Grays Harbor Corporation	Hoquiam							50					Bonds and writing.
Grays Harbor Pulp & Paper Co.	Hoquiam			150									
Inland Empire Paper Co.	Millwood	100	35				115						News, Poster, etc.
Longview Fibre Co.	Longview	30			120				135				Container Board and M. G. Wrapping.
National Paper Products Co.	Port Townsend				250				235				Container Board and Kraft Liner.
Olympic Forest Products Co.	Port Angeles			175									
Pacific Coast Paper Mills	Bellingham							15					Toilet Tissues, etc.
Pacific Straw Paper & Board Co.	Longview	30									52		
Rainier Pulp & Paper Co.	Shelton			170									
Puget Sound Pulp & Timber Co.,	Everett			175									
Puget Sound Pulp & Timber Co., Fidalgo Division	Anacortes		65										
Puget Sound Pulp & Timber Co., San Juan Division	Bellingham		100										
Riverside Paper Co.	Tacoma											10	Roofing (under construction).
Shaffer Box Co.	Tacoma		50										Mill idle.
St. Regis Kraft Co.	Tacoma				160								Mill idle.
Tumwater Paper Mills Co.	Tumwater	20						40					Mill idle.
Washington Pulp & Paper Corporation	Port Angeles	260	75				310						Newsprint.
Weyerhaeuser Timber Co.	Longview			175									

Tumwater Paper Mills Co.	Tumwater	20						40					Mill idle.
Washington Pulp & Paper Corporation	Port Angeles	260	75				310						Newsprint.
Weyerhaeuser Timber Co.	Longview			175									
OREGON													
Crown Willamette Paper Co.	Lebanon		35					35					Wrapping.
Crown Willamette Paper Co.	Oregon City	60											
Crown Willamette Paper Co.	West Linn	375	90				350						Newsprint.
Fir-Tex Insulating Board Co.	St. Helens											*	Wood fibre insulating board. Daily capacity 250,000 sq. ft.
Hawley Pulp & Paper Co.	Oregon City	170	85				120	105					News, Sulphite Wrapping, Lightweight Papers, etc.
Oregon Pulp & Paper Co.	Salem			120				120					Sulphite Bonds, Glassine, Greaseproof.
St. Helens Pulp & Paper Co.	St. Helens				60				60				Wrapping—Adding second machine.
Sitka Spruce Pulp & Paper Co.	Empire		60										
Spaulding Pulp & Paper Co.	Newberg		75										Mill idle.
Western Board Products Co.	Salem											8	Binder Board.
CALIFORNIA													
California Fruit Wrapping Mills	Pomona							25					Fruit Wrap.
California-Oregon Paper Mills	Los Angeles							40					Wrapping, Fruit Wrap, etc.
Certain-teed Products Corp.	Richmond											38	Roofing and Felts.
Crown Willamette Paper Co.	Floriston												Dismantled.
Fibreboard Products	Los Angeles										100		
Fibreboard Products	Stockton										250		
Fibreboard Products	Los Angeles										8		Binder Board.
Fibreboard Products	Antioch										200		Container Board, Tag, etc.
Johns-Manville Corporation	Pittsburg											35	Asbestos Paper.
Los Angeles Paper Manufacturing Co.	Los Angeles											30	Roofing.
Paraffine Cos., Inc.	Emeryville											100	Roofing and Felts.
Pioneer Paper Co.	Los Angeles											75	Roofing and Felts.
COLORADO													
Colorado Pulp & Paper Co.	Denver	15									50		
HAWAII													
Olaa Sugar Company	Olaa											10	Mulch paper.
Hawaiian Cane Products Co.	Hilo												Insulating board from bagasse.
Total daily capacities		1915	1365	1175	850	75	1745	965	550	125	810	304	

Total Pulp Capacity—All Grades **5,380**

Total Paper Capacity—All Grades **4,499**

*Totals do not include 250,000 sq. ft. of insulating board.

Total Pacific Canadian Capacity—Pulp, 1,320 tons; Paper, 1,010 tons.

Total Pacific United States Capacity—Pulp, 4,060 tons; Paper, 3,489 tons.

Brubaker Aerial Surveys, Portland

LONGVIEW, WASHINGTON

The new bleached sulphite pulp mill of the Weyerhaeuser Timber Company, Pulp Division

NEW CONSTRUCTION ON THE PACIFIC COAST

EACH year that passes in review adds something to the stature of the pulp and paper industry of the Pacific Coast. In that respect the year 1931 was no exception. Altho by no means approaching the exceptional expansion characterizing the several years immediately preceding, 1931 added to the Coast industry one complete and thoroly modern 175-ton high grade bleached sulphite pulp mill, one new wrapping paper machine of 50 tons daily capacity, and one specialty paper machine of 20 tons capacity, equipped with vacuum dryer.

Also belonging at least in part to the 1931 catalog of new tonnage are two major expansion programs in established mills, finally completed early in the year, which served to add three new wrapping specialties paper machines and one new high speed news print machine with a daily rating of 120 tons. The installation of three machines did not in effect add to the total number of tons produced, as the program was essentially one of shifting grades from lower to higher grade products.

In addition to mill programs, there were several important additions in the field of paper converters.

The outstanding addition to Coast tonnage was the completion of the bleached sulphite pulp mill of the Weyerhaeuser Timber Company, Pulp Division, at Longview, Washington. This new construction was of particular significance because it marked the entry into the world of pulp of a company that has long occupied a leading position as a timber holder, logger, and lumber manufacturer. Up until the time of the present venture into pulp the company has relied upon mechanical means for converting its forest values into items of commerce. Now it has turned to chemistry as an aid.

Some time ago the Weyerhaeuser Timber Company established a huge lumber manufacturing enterprise on a mile-square site fronting deep water on the Columbia River at Longview. This site is served by ocean vessels, main rail lines, and has access to an immense log area. The pulp mill was organized as an integral part of the established wood-using industrial unit and serves to effect a more efficient operation as a whole.

· 1931 ·

Distinctive features of the new mill include a modern water treating and filtering plant with a daily capacity of 20,000,000 gallons; a wood preparation plant of new type; liberal use of special acid-resisting steels; extensive use of wood pipe and wood stock tanks; extra large capacity of screens and rifflers; three phase bleaching; vacuum section for pulp drying; elaborate use of metering and control instruments; and operation under an elaborate system of technical control to insure quality and uniformity of product. Design and construction was under the supervision of O. C. Schoenwerk, consulting engineer.

The wood preparation plant is situated about one-half mile from the main group of pulp mill buildings. It is adjacent to the main group of sawmills and the power plant. One sawmill unit is employed to break open the logs. The wood plant is a separate building. Wood is accepted from the breakdown mill in the form of large cants—many of which are inside, clear wood—and ordinary slabs. The latter are serviced in conventional manner, but the large cants are cleaned on a four-line system of automatic barkers, slashers, knot borers, and washers, before going to chippers and screens.

Accepted chips are stored in a new type, ground-level bin with a Lamella type roof, located adjoining the digester building. Maximum storage for cubic area of building is claimed for this construction, and a special arrangement of hoppers permits easy and selective withdrawal of chips. The digesters, of which there are six, are filled as needed by a continuous belt.

Altho the newer acid resisting steels have been coming into use in individual and largely experimental locations, the new Weyerhaeuser mill is one of the first to specify the new steels on a wholesale basis. While the initial cost of steel is relatively higher, selection was made on the basis of service, life expectancy, and pulp cleanliness. Special steels have replaced other materials for practically every position subject to excessive corrosion.

Continuous wood stave pipe, bound with hoops, is

NORMAN KELLY
Assistant Superintendent

B. T. LARRABEE
Superintendent

RALPH B. HANSEN
Technical Director

Operating personnel of the Weyerhaeuser Timber Company, Pulp Division

used for all stock and water lines down to six inches in diameter, the selection here being made on the basis of cleanliness, non-corrosion, and serviceability. Stock tanks, blow pits, and storage chests are all wood stave construction, as are all water and sewer lines.

The sewer system is particularly notable as the mill is constructed without basements and carry-off is handled by means of a central sump and a set of three positive-acting, large capacity, centrifugal pumps.

The pulp mill proper, with the exception of chip storage and the wood room, comprise an integral set of buildings, which permit straight line production. These units range in order from acid plant, through digester building, blowpits, stock chests, screen and rifflers, bleach plant, second screens and rifflers, stock chests, and machine room to pulp warehouse.

As an aid to operation under technical control the mill has installed a large number of recording and metering devices which permit the operators to have an exact knowledge of the manufacturing process at any point. All water is metered and stock consistency is predetermined and exactly controlled at all points beyond the blowpits. This feature in itself has been credited largely for the ability of the mill to maintain uniformity.

Consistency of the stock going to the forming wire on the drying machine is controlled accurately to lay a sheet of uniform caliper and density. The machine is equipped with suction couches and presses, and the pulp is dried under the low temperatures possible in the Minton vacuum dryer. The machine room is of air-tight and dust-tight construction, and all air admitted is filtered and conditioned and distributed thru a duct system.

New warehouse constructed by Iniand Empire Paper Company in 1931

The mill has one of the best equipped laboratories of any pulp plant in existence. The careful technical control of operations centers in this laboratory. All variables in the mill process are plotted and exact measurement is the keynote in the introduction of all materials entering into the manufacturing process. The result has shown itself to be consistent manufacture of a high grade, uniform pulp. The Weyerhaeuser Timber Company, Pulp Division, is in charge of Robert B. Wolf, general manager, a widely known authority on bleached pulps.

During the year the Longview Fibre Company of Longview, Washington, began the installation of a small 90-inch specialty machine with Minton vacuum dryer section. The work had not been completed at the close of the year, nor had it been announced what grades would be manufactured, altho it was understood that the new machine would be equipped to use the new solvent sizing process developed during the year by Ogden Minton, inventor of the Minton vacuum dryer.

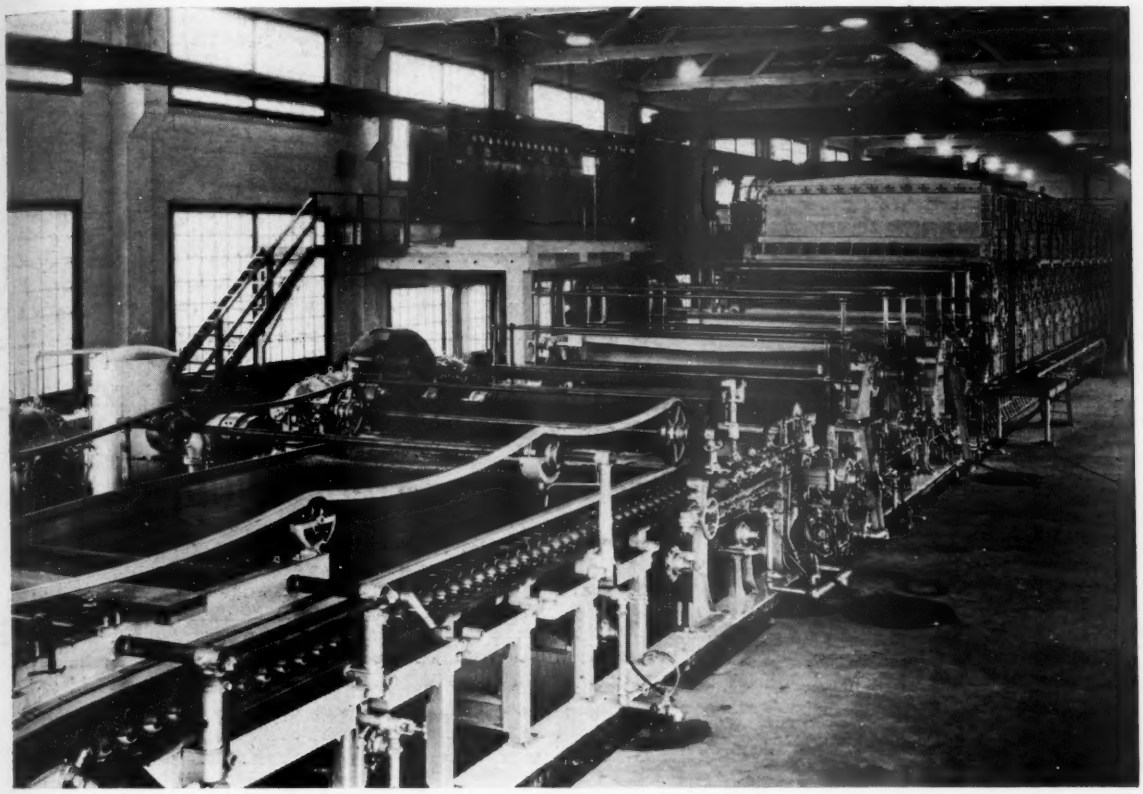
The new Longview machine included a number of interesting features, including some new departures in electrical drive, designed to permit a close control of speeds over a wide range.

No new building was necessary for the No. 3 machine, as it was installed in the same room as its two predecessors.

However, the Longview Fibre Company, in its comparatively brief Pacific Coast existence, has demonstrated a steady expansion of activities, altho somewhat gradual. The mill started originally with one vertical dryer and a 120-ton capacity pulp mill. Its first product was a kraft board made entirely from Douglas Fir. Later a Yankee machine was added and the production schedule was widened to include m. g. wrapping papers. Subsequently a small groundwood mill was installed to supplement the pulp supply. Then a paper bag factory and more recently a fibre container plant were added. The No. 3 machine will still further expand the range of activities.

The Longview mill, which has been under the resident managership of Robert S. Wertheimer since its inception, has operated at an exceptionally steady rate since it first went into production.

In 1931 the St. Helens Pulp & Paper Company at



The machine room in the Weyerhaeuser pulp mill, showing vacuum dryer as seen from the fourdrinier end.

St. Helens, Oregon, which late in 1926 began production as a new mill with one machine, capable of producing 60 tons of kraft wrapping paper daily, added a new high speed machine with a wire 202 inches wide, and designed primarily to operate on light weight papers up to 1400 to 1500 feet per minute. Under the direction of the company's president and general manager, Max Oberdorfer, the company has since the beginning improved and expanded upon its products. The addition of the second machine permits the production of a more diversified line of papers, including tissues and towels, and the company has taken advantage of this circumstance during the year to greatly enlarge the width of its production.

The new machine has many improved features designed to permit high speed production of light weight papers. The drive is the spiral bevel type. Antifriction bearings are employed extensively. The machine is driven by a 250 h.p. steam turbine exhausting to the drying system.

Installation of the new machine necessitated a number of other improvements in the mill including the construction of a new machine room, and a roll grinding department completely equipped. In addition the company expanded its beater room and installed a number of new units bringing the mill's total number of beaters to eighteen. The pulp capacity was enlarged by the installation of one more rotary digester and a small groundwood mill to supplement the mill production of kraft pulp in certain grades of paper.

Since beginning production the St. Helens mill has operated at unusually steady capacity and has consistently improved and expanded its facilities to include an increasing proportion of the specialty grades. Today the plant has a daily capacity of approximately 100 tons of finished paper per day. It produces its own pulp. It operates its own large paper bag factory in connection. The Jaite Company also operates an adjoining bag factory for the production of multi-wall bags for cement and other bulk products.

At Camas, Washington, the Crown Willamette Paper Company wound up the last details of a program of extensive proportions inaugurated at an earlier period and treated in some detail in previous reviews. This program included a rebuilding of the wood mill, installation of a new chipping plant, the addition of one new sulphite digester of 26 tons capacity, the construction of a complete new pulp bleaching plant, the construction of a new water filter plant, major additions to the steam and power plant, the addition of three new paper machines and the rebuilding of several others. The entire program did not materially change the daily tonnage capacity of the mill, but greatly enlarged the ability of the mill to produce the specialty grades. The present production schedule includes more than 1,000 standard items and colors in wrappings and tissues. In addition to the improvements and additions in the pulp and paper mill proper, the company constructed a complete new converting plant wherein remanufacturing of bathroom tissue is centralized.

The three new machines added included one specifically designed for the production of fruit wrap and tissue, one for the production of felt striped specialties of medium to light weight, bleached and unbleached sulphite and kraft paper—a Yankee type machine—and one machine designed to produce 25 tons of 10-pound toilet tissue daily.

A little later on a No. 12 paper machine was added,

These three executives of Pacific Coast mills are, from left to right: Felix Pagenstecher, president, Hawley Pulp & Paper Company; Robert S. Wertheimer, resident manager, Longview Fibre Company; and Max Oberdorfer, president and general manager, St. Helens Pulp & Paper Company.

this being a small unit removed from the recently dismantled plant of the Crown Willamette Paper Company, at Floriston, California.

In all the program carried out at the Camas mill was one of the most extensive ever to be carried out in the paper industry and today it is said that the Camas mill is the largest specialty converting mill of its kind in the world.

When the year 1931 opened the Powell River Company, Ltd., operating a 650-ton news print mill at Powell River, B. C., the largest single mill on the Pacific Coast, put into production its No. 7 machine, a 226-inch unit, designed to operate at speeds up to 1,400 feet per minute.

Installation of Powell River's No. 7 machine marked the climax of a very extensive program. The ultimate aim of the mill is to establish a capacity of 1,000 tons daily. Toward this end the company has as a part of its present program developed a new hydro-electric project on the Lois River some sixteen miles south of the present plant, and installed there an initial generator unit with a capacity of 22,000 h.p. A second unit of the same size is planned for later installation as conditions demands.

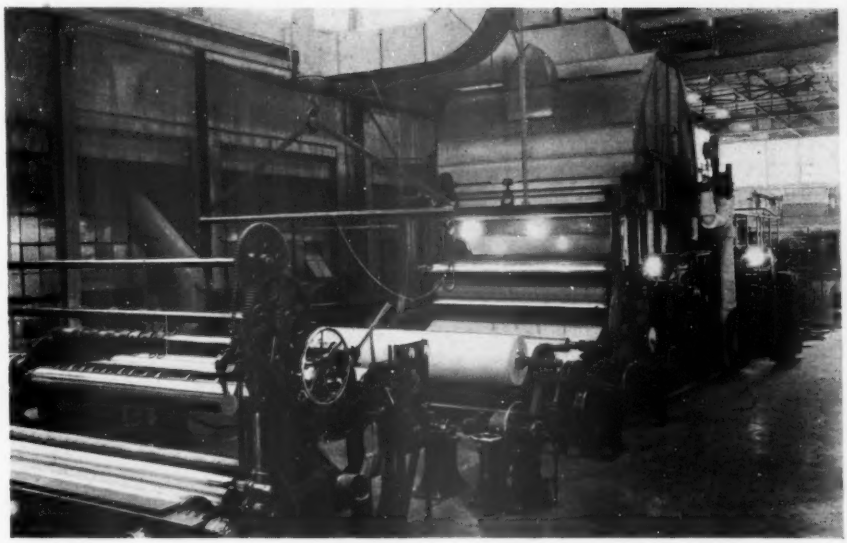
Energy developed at Lois River is conveyed over a new transmission line to the main mill, at the Powell River townsite, where the company has decided to concentrate its manufacturing activities. As a part of the recent program the company has constructed an entirely new and thoroly modern, electrically operated, mechanical pulp mill equipped with fourteen new grinders, giving the mill a total of 52 grinders. One new 16-ton digester was added to the sulphite plant. In addition, major improvements were made in the steam plant, including one new 950 h.p. boiler, capable of operating at 425% of rating, at 600 lbs. working pressure. A new and thoroly modern machine room was constructed to house the new No. 7 machine, space being provided for the addition of No. 8 when such addition is deemed advisable.

The Inland Empire Paper Company at Millwood, Washington, which has a daily capacity of 100 tons of news print and poster paper, completed an improvement program during the year, but did not add to its tonnage. The program consisted principally of construction of a new storage and shipping room, rebuilding of the grinder room, reconstruction of the wood room, addition to the power sub-station and the construction of new chests in what used to be part of the beater room.

One important development, of interest, but not exactly within the field of pulp and paper, was the construction by the Hawaiian Cane Products, Ltd., of an insulation board mill in the Hawaiian Islands. This plant, costing in the neighborhood of $1,750,000, was developed by the major sugar interests in the islands, with the purpose of finding some outlet for sugar cane bagasse which constituted a rather burdensome residue in the normal course of sugar manufacturing operations. The plant has recently gone into production and is looking to the islands and to the mainland for its market.

One Pacific Coast development that drew an unusual amount of attention was the installation of a log barking plant at the bleached sulphite pulp mill of the British Columbia Pulp & Paper Co., at Port Alice on Northern Vancouver Island. The barker is essentially a large size edition of the well known Thorne barker which has been used for some time in the eastern part of the continent and in Europe on small pulp wood. The Port Alice unit was constructed on exceptionally heavy lines and is designed to handle logs 10 feet in length and up to 30 inches in diameter, with the average diameter about 20 inches. As logs of such large size often weigh 2,000 pounds or more it was necessary to devise a number of modifications to Thorne barker operations to take care of the additional problems involved.

The Cascade Paper Company, a 50-ton book paper mill at West Tacoma, Washington, was purchased during the year by the Everett Pulp & Paper Company, which operates a 75-ton book paper mill at Everett, Washington. The Cascade mill was purchased out of receivership and had for some time been idle. The



The Yankee type machine shown is No. 10, one of the three new units installed by the Crown Willamette Paper Company at Camas, Washington in an extensive improvement program recently completed and which makes possible the production of a greater variety of specialties.

West Tacoma plant is now known as the West Tacoma Division of the Everett Pulp & Paper Company, but the new owners have made no announcement with respect to re-conditioning and operating the new addition.

In the field of paper converters a number of substantial additions were made during the year on the Pacific Coast. The Jaite Bag Company, which for several years has operated a multi-wall paper bag factory in connection with the St. Helens Pulp and Paper Co., at St. Helens, Oregon, added to its equipment during the year to permit a greater variety of production. The bag plant operated by the St. Helens Pulp & Paper company under its own management also added a number of new machines.

The Bates Valve Bag Company, subsidiary of the St. Regis Paper Company, constructed a new plant in Seattle during the year, having a daily capacity of 150,000 multi-wall paper bags for the packaging of cement and similar products. In addition, this company enlarged the capacity of its plant which it had previously constructed at Los Angeles.

The Grays Harbor Pulp & Paper Company at Hoquiam, Washington, added a converting plant during the year and greatly diversified its production. The original entry of this mill into paper production involved the installation of one paper machine of 50 tons daily capacity for the manufacture of "Management" bond, a younger brother paper to the well known and widely advertised Hammermill Bond. Diversification during the past year has brought into the production schedule a ledger grade in white and colors, mimeograph paper, envelope paper, and offset book paper. Subsequently, activities were expanded into the converting fields to include school books, note book fillers, scratch pads, cash register rolls and similar items.

At Camas, Washington, The Tissue Company of Sauguerties, N. Y., installed a small plant adjacent to the paper mill of the Crown Willamette Paper Company for the production of paper napkins. Three units were first installed and a fourth was subsequently added.

The Hawley Pulp & Paper Company added a converting plant during the year for the production of paper towels and other specialty items.

Another development of interest is a small plant independently operated in connection with the Crown Willamette paper mill at Camas for the production of paper twine. The output has shown a consistent increase.

In Los Angeles the Crown Willamette Paper Company, which for some years has operated a converting plant to service the fruit and vegetable growing industries of Southern California, constructed an enlarged and much improved plant at a new location, and provided in conjunction therewith storage space for the products of its northern mills sold into the California market. The new converting plant has excellent transportation facilities.

Another addition to the converting field during the year in Los Angeles was the construction of the Smith-Lee Bottle Cap Company, the only direct factory branch of the concern. The new plant has a nine-hour capacity of 300,000 caps of one or two colors on each of the seven machines installed.

The Pacific Waxed Paper Company constructed a modern daylight plant in Seattle during the year and moved its operations from the Tacoma location. At the same time the company added a number of new machines and greatly enlarged the variety of its output.

In conclusion it might be said that the more recent trends on the Pacific Coast have been, not to simple increases in mass tonnage, but toward a greater diversification of products, introduction of new lines, and an attempt to meet local demands for specialty items from local sources.

PAPER MANUFACTURING on the PACIFIC COAST

A BIT OF HISTORY

By LOUIS A. COLTON
Vice President, Zellerbach Paper Company

BACK in the days when San Francisco was a roaring gold camp on the sand lots and the Pacific Coast region was mostly a vision on the pioneer's horizon, the paper distributor was non-existent as a link in the economic chain. Today he performs an important function in providing for the needs of the twelve millions of people who have carved out cities, farms, factories and homes in the far Western region since the days of '49.

It has been an unwritten law among us of the West that a dollar spent here on locally manufactured goods somehow was more helpful to all than the same dollar sent East and, while all of us love and respect our Eastern friends, if the truth be confessed we rather favor the fellows who "make it at home." It is well that we occasionally take stock of ourselves, to see how far we have come, and that is what this discussion proposes to do.

Naturally my approach is from the distributor's standpoint, for that to me is familiar ground. But distribution is preceded by manufacture, and that is where the tale must begin.

At the age of 23 one Samuel P. Taylor discovered that the gold bug had bitten him. He was one in the tide of humanity that flowed to California in 1849. He came, he saw, and his quest for gold was fairly successful, but it was not until 1855, when he set out a second time from New York for the Coast that we of the paper industry take note of him. In that year Mr. Taylor went to San Francisco with a tiny 36-inch cylinder paper machine of Connecticut vintage stowed away — shall we say, under his arm?

Our early California pioneers wanted the news on the printed page, and there were pioneer publishers who set out to provide what was wanted. But being separated from a source of paper supply removed the length and breadth of two continents was not a situation of first convenience. Here we have the first example of a local Pacific Coast paper demand being met with a local supply. How that fundamental premise has been enlarged upon in the three quarters of a century since elapsed we shall see in succeeding paragraphs.

Pioneer Taylor set up his little paper mill on a creek 32 miles northwest of San Francisco. An overshot water wheel 30 feet in diameter provided the motive power. It is a far cry from that little single cylinder six-dryer machine, with its four beaters, which comprised **in toto** the Pacific Coast paper manufacturing industry of 1855, to the many mills which now dot the Western landscape and roll out paper in 20-foot widths at a speed of more than 1,000 feet per minute. It is a far cry, but the years are not many. That little Taylor mill produced two tons of paper each day, which comprised, we quote from an historian "all the news print and wrapping paper used in the city of San Francisco."

Right here we get, from the same historian, an inkling of the origin of the paper merchandising business in these Far Western states in this statement: "The Taylor boys and their father also entered the distributing game in 1856 under the name of S. P. Taylor & Sons."

In 1866 the first mill in the Pacific Northwest and the second on the Pacific Coast was erected at Oregon City at the falls on the Willamette River. Here again was a case of a supply developing to meet a demand, this time for the staunch people who had followed the 2,000 weary miles of the Oregon Trail to its end and settled upon the land in the Portland vicinity.

The Oregon City mill had a rated daily output of three-quarters of a ton. Its obstacles were many and it passed in the following year to W. W. Buck and H. L. Pittock, whose name will go down in history with Portland's pioneer newspaper, the "Oregonian". The former rebuilt his sawmill at Clackamas, and paper manufacture superseded lumber manufacture in the following years. At this point enters the name of one race of paper makers that still is found in the Coast

industry today. It is Lewthwaite. William Lewthwaite, papermaker emeritus on the Pacific Coast, became superintendent of the rehabilitated Pittock-Buck paper mill, coming north from the Taylor mill in California at the solicitation of Mr. Pittock.

The next paper mill in Pacific Coast history has attached to it a little colorful history. Around San Francisco the name of "Lick" is being handed down to posterity by means of such tangible evidences of philanthropy as the Lick Observatory and the Lick Free Baths. The name comes from James Lick, one of California's best known and most beloved pioneers. It is said that young Lick, when working as a flour mill apprentice near Philadelphia in the early days, was rebuked by the owner of the mill and told that said miller's daughter aspired to a better marriage than young Lick proposed. This aroused the young man to make the boast that he would some day build a flour mill that would have finer furnishings than the miller's parlor.

The boast was made good when Lick in the early days of San Francisco built a 10-ton flour mill at Agnew, some 50 miles from San Francisco, and finished inside with choice mahoganies and other esteemed woods. In passing into other hands in the early '70s the mill was stripped of its finery and converted into a paper mill, and here straw wrapping paper was manufactured. Razed by fire, the original mill gave way to another equipped with a 68-inch fourdrinier paper machine. This mill made news print in 52-inch rolls for Hearst's San Francisco Examiner, but it succumbed to more modern mills in Oregon later, and was abandoned.

Stockton, whose origin dates quite well back into California's history, got on the paper making map in 1870 when Rufus B. Lane and Henry Pierce tried unsuccessfully to put into commercial practice their idea for making paper out of tulle grass. Later, with new machines, and with the help of the paper making veteran, John Lewthwaite, the Stockton mill became an active competitor on news print paper produced from rag and straw stock.

The late W. P. Hawley, founder and for some time president of the Hawley Pulp & Paper Company at Oregon City, got his papermaking start at the Stockton mill.

Later on the Stockton mill was dismantled and one machine was moved up to Oregon City, while the pioneer Brown brothers bought up the other two for a mill they had started in Antioch, another California city that today is still on the paper industry map. The name of Brown needs further mention. Peter Brown was important among the pioneer paper makers of the Pacific Coast area. With a brother, James, he built a mill in Corralitos to supply straw wrapping paper for the growing California population. The Corralitos mill became history long ago. When the original mill at Antioch failed, the Browns bought it up, ran it for a number of years as the California Paper Company, sold out to the Paraffine Companies, Inc., and today the plant is still going strong under the wing of Fibreboard Products, Inc. The name of Brown lives on and several descendants of the estimable pioneers will be found in Los Angeles today prominently identified with the Los Angeles Paper Manufacturing Company and the Fibreboard Products, Inc.

This quick review pretty well establishes the early history of paper making on the Coast, shows us where the roots were. Some of the intermediate history can be glossed over more hurriedly. The point that ought to be emphasized is that these early mills developed to meet the needs of a primitive community for news print and a very limited amount of wrapping. Rags and straw provided the fibre for those early Pacific Coast papers, and it was natural that manufacturing should develop adjacent to the centers of population.

When wood began to displace other materials as a paper making fibre, it caused a shift out of treeless central California into the abundant forests of the Oregon territory. Today the printing and wrapping papers have quite generally moved north out of California, altho the Golden Gate still occupies an important place in the sun when it comes to manufacturing different grades of board and roofing papers.

Up in the Pacific Northwest the little original Clackamas plant began running behind the demands for paper in that region as the territory developed, thus inducing Mr. Pittock and associates to hunt up a new site at Camas, Washington, some 15 miles up the Columbia from Portland. Construction began in 1883, production started in 1885, fire destroyed the original mill in 1887, but rebuilding was undertaken at once.

The history of the Camas mill can be summed up quickly. It was founded somewhat out of necessity, to provide news print for a pioneer publisher, but today, it has grown to a 14-machine mill, producing more than 1,000 varieties of paper, at a rate in excess of 300 tons daily. News print is no longer on its manufacturing schedule.

Up until the '90s the Pacific Coast confined its paper manufactures to primitive items for a primitive community, one might say. News print and a little wrapping, with perhaps a little launching into varieties on the latter, but not much. Butchers' paper, otherwise the brown wrapping that a generation ago was part and parcel of the meat market, was the standard wrap for meats. It was a terrible product as compared to the fine butcher papers now used. I distinctly recall, in the early days of my career as a paper merchandiser, filling orders for light weight straw wrapping for cigarette paper, which was shipped to Mexico.

It was cheap and burned well, possibly no worse than

Here is one pioneer paper mill of the Pacific Coast, the Everett Pulp & Paper Company, as it looked in 1892.

Brubaker Aerial Surveys, Portland

OREGON CITY, OREGON

Here at the Falls on the Willamette River, not far from Portland, the paper industry had its beginning in the Pacific Northwest. Today the same site boasts two mills with a combined daily output in excess of 500 tons of paper. At the left is the West Linn plant of Crown Willamette Paper Co., and at right is the Hawley Pulp & Paper Co.

the tobacco used therein. Mayhap it was indirectly responsible for the epidemic of revolutions that Mexico had at the time. Who knows?

About this time we used a so-called rag paper, probably so named because it contained no rag content whatsoever. The fruit and fish dealers were active users. Nowadays we dignify this paper by the name of bogus. Straw and binder boards were made at the Corralitos mill and later, to a great extent, at Antioch. The use of binder boards hasn't changed much, but straw boards have given way almost entirely to chipboard. The Japanese and the Swedes had the call on straw board for a time, but the falling off in demand has rendered the grade virtually obsolete and I venture to say that few, if any, paper merchants today stock this item which was once a good selling staple.

It wasn't until in the early '90s that the Pacific Coast broke into the limelight as an honest-to-God place to obtain good papers. By that time the paper distributing business had grown up to reasonable proportions, one of its chief functions being to keep local stocks of papers that were for the most part manufactured in mills from 2,000 to 3,000 miles away. But in 1891 some enterprising souls began the construction of a mill at Everett, Washington, and in July, 1892, the Pacific Coast was offered the first sheet of locally-made book paper.

Mr. William Howarth, president of the Everett Pulp & Paper Company, and associated with that Pacific Coast institution for some forty years, presents an interesting account of the trials and tribulations of that pioneer fine paper mill. It had, Mr. Howarth says, a rated capacity of 15 tons a day, but, up until the time that A. H. B. Jordan took hold as superintendent in 1896, had never done better than 12½ tons a day. The line consisted of m.f. book, supercalendared book, chemical writing, drab express and Manila wrappings. In the offices of the Everett mill there hangs today a sample of the first sheet of paper produced, side by side with a present-day sample. The comparison is testimony enough that the organization has kept abreast of Coast development by expanding its varieties and improving its product.

The Everett mill in itself is a good example of the steadily growing list of paper grades produced on the Coast. Today the mill produces 70 tons a day and offers such grades as m.f. book; super book; English finish, eggshell, offset and Oriental book; m.f. and super label; poster; rotogravure; railroad writing; mimeo; bond; catalog; Occidental drawing; manila; cartridge paper; soap wrapper and drug. In addition, the converting plant, added in 1900, offers such remanufactures as filing sheets; ruled school papers; ruled foolscap and legal papers; fillers; notebooks; memorandum, counter, time, music, stenographer and reporter note books; tablets, pads, and typewriter paper.

Naturally the growth of population on the Pacific Coast and the constantly widening production schedules of the Western pulp and paper industry has increased the function of the distribution end of the paper business. We can picture our pioneer population of three quarters of a century ago, months removed from sources of supply, by necessity turning resourceful minds to supply their needs.

It would perhaps be investing those pioneers with more foresight than is due to say that when they founded their primitive mills they visioned with any accuracy the full portent of Pacific Coast industrial, agricultural, and commercial development that was to come, or the ramifications of the paper industry that was to accompany. More likely they, as do we today, saw not very far beyond the circumstances of the moment, were more concerned about making a ton or two of paper a day and moving it promptly to market, than given to gazing into the crystal ball and borrowing the eyes of their grandchildren.

Those few hardy pioneers of the paper industry on the Pacific Coast found a demand, and set out to meet it. Now that those events have been dimmed by several decades we are apt to hook on a little romance, but,

Continued on page 83

PULP AND PAPER INDUSTRY — PACIFIC COAST

Principal Statistics—1929
Source—Census of Manufactures: 1929

	California	Oregon	Washington
HORSEPOWER (rated capacity) of POWER EQUIPMENT—			
Total	44,948	91,006	141,602
Prime Movers	17,020	50,322	59,068
Motors run by purchased energy	27,928	40,684	82,534
GENERAL STATISTICS FOR THE PAPER INDUSTRY—			
Salaried Officers and Employes	243	144	297
Wage Earners (averages for the year)	1,763	1,115	2,774
Salaries	$595,276	$374,236	$911,147
Wages	$2,701,135	$1,728,423	$3,667,255
Cost Materials, Fuel & Purchased Electric Energy—			
Total	$9,300,159	$8,503,547	$15,878,422
Materials	$8,148,823	$7,324,060	$13,774,146
Fuel and purchased energy	$1,151,336	$1,179,487	$2,104,276
Value of Products	$17,136,402	$16,229,279	$28,429,104
Value added by Mfg.	$7,836,243	$7,725,732	$12,550,682
Quantity Produced— (ton of 2000 lbs.)	253,800	222,731	382,253
Paper Making Materials Consumed—			
Wood Pulp, tons	39,389	149,584	366,369
value	$1,748,951	$3,796,615	$10,833,923
Paper Stock, tons	173,790	----------	39,346
value	$2,946,061	----------	$713,977
Rags - - - - tons	39,929	----------	----------
value	$1,132,914	----------	----------
GENERAL STATISTICS FOR THE PULP INDUSTRY—			
Salaried Officers and Employes	*	72†	188
Wage Earners (average for the year)	*	755†	2,394
Salaries	*	$156,486†	$498,972
Wages	*	$1,147,809†	$3,648,961
Cost Materials, Fuel & Purchased Electric Energy—			
Total	*	$4,429,281†	$10,756,098
Materials	*	$3,823,437†	$9,844,461
Fuel and purchased energy	*	$605,844†	$911,637
Value of Products	*	$7,011,203†	$18,664,992
Value added by Mfg.	*	$2,581,922†	$7,908,894

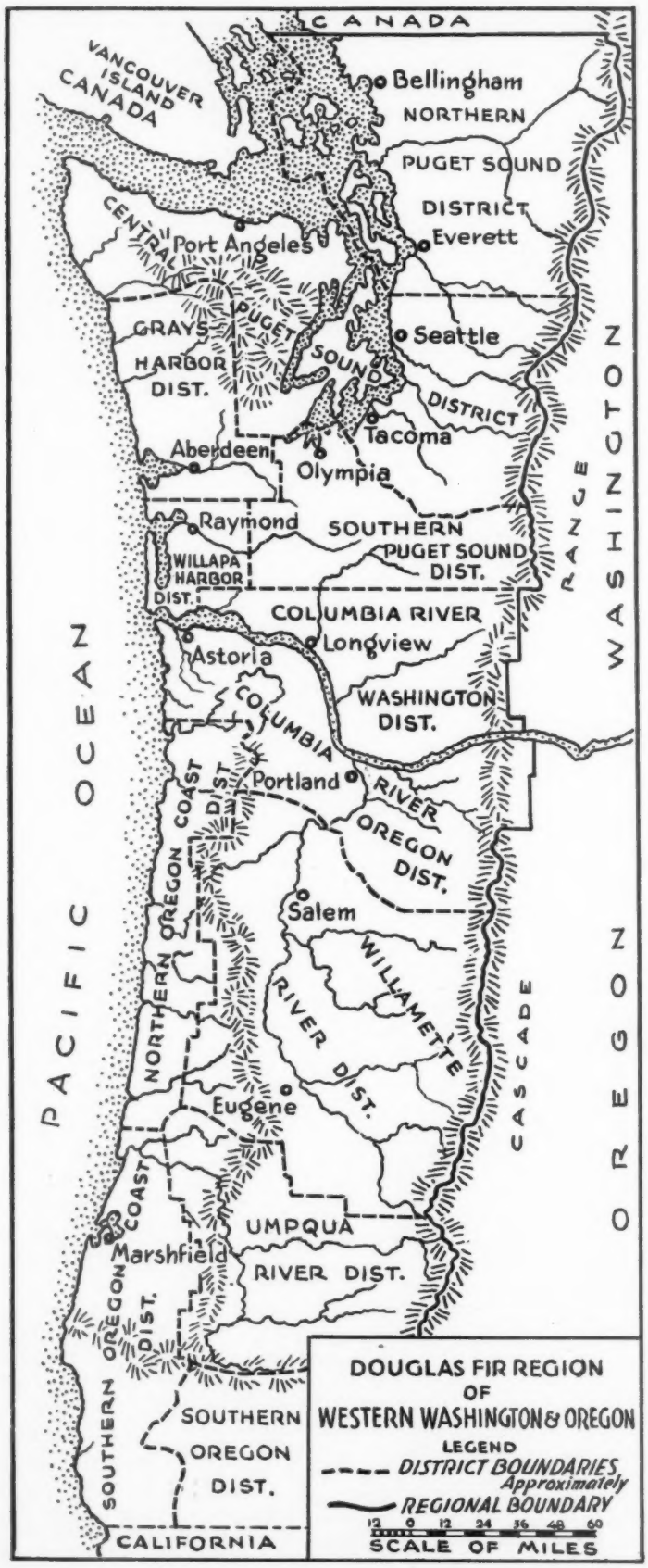
Note—Statistics for earlier years are not strictly comparable. For 1927 and 1929 pulp produced in self-contained mills was treated as an intermediate product to which no cost or value was assigned. In 1927 and 1929, however, the values of such pulp have been included both in the value of products of the pulp industry and in the cost of materials of the paper industry.

The figures shown under "value of products" refer in each case to production, not to sales. This is the statistical procedure in taking the Census of Manufactures.

The "value added by manufacture" refers to the value of products less the cost of materials, fuel, and purchased electric energy.

*Included in Oregon.

†Includes California.



The total area shown in this map coincides quite closely with the so-called Douglas Fir region in the states of Washington and Oregon. The summit of the Cascade range marks the Eastern boundary of this forest. A height of land running east-west near the California-Oregon line marks the southern boundary.

The Douglas Fir region extends hundreds of miles farther north up the British Columbia Coast, and pulpwood areas range still greater distances along a narrow Coastal belt in Southeastern Alaska.

The district boundaries are of course arbitrary, but conform in general to log movements which are dictated by transportation possibilities. However, the names for the districts as shown, and the district boundaries, are rapidly becoming fixtures thru accepted usage. The district names are in each case quite fitting.

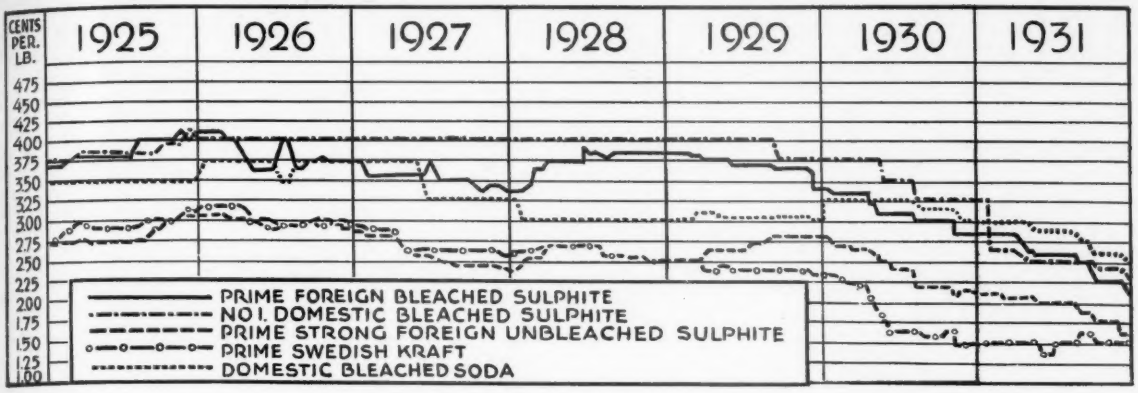
While the Puget Sound district is divided here into northern, central and southern subdistricts, the area must be considered largely as a whole, due to easy towing possibilities and deep sea shipping available practically to the entire district.

Aberdeen and Raymond, shown in this map, are located on Grays Harbor and Willapa Harbor respectively, both of which are bays with improved port facilities capable of accommodating all but the largest ocean vessels.

The Columbia River is navigable by deep sea shipping as far as Portland, which stands at the junction of the Columbia and the Willamette. The Columbia district is similar in many respects to the Puget Sound country, and mills located anywhere between Portland and the sea are about on a par in bidding for any logs put into this broad stream.

The big interior area south of Portland drained by the Willamette River includes a vast timber country but is handicapped on the score of direct deep sea outlet except thru Portland or the Oregon Coast. It is sometimes called the small sawmill country.

The Oregon Coast is quite rugged. Its tributary rivers are short. It is lacking in harbors. The greatest port development at the present time is at Coos Bay, on which Marshfield is located. Deep sea tonnage of all but largest size finds a safe harbor here. Coos Bay is the terminus of across-state railroad.



The Trend of Wood Pulp Prices—1925 to 1931

WORLD EVENTS IN 1931

Some of the High Spots Set Down in Review

A YEAR of deflation, that was 1931, attended by many drastic upsets of the established order. Wood pulp, the foundation of the world paper industry, suffered severe shocks during the year, transmitting them to other parts of the industry. Prices declined drastically practically everywhere and market conditions were chaotic.

The United States, world's largest producer, consumer and importer of wood pulp, reduced its imports by 12% in 1931, the volume sinking to 1,425,000 long tons as compared with 1,636,000 long tons in 1930. Meanwhile, due to price declines, the total value of pulp imports declined to $61,000,000 as compared with $81,000,000 in the previous year.

Altho the import volume shrank visibly, a comparison of pulp imports with domestic production reveals that the domestic producers had to absorb the larger share of the shrinkage in the volume of consumption. Based on the production of mills reporting to the American Paper & Pulp Association, production of wood pulp of all kinds in the United States in 1931 declined by 17.5% from the total for 1930, or a shrinkage of 425,000 short tons. The decline from the 1929 high was 23.1%, or 600,000 short tons.

Sulphite pulp prices were terribly upset by the events of 1931. Altho prime foreign bleached sulphite was already thought to be distressingly low at $57 per short ton (ex-dock N. Y.), the prevailing price at the opening of the year 1931, price pressure continued steadily throughout the twelve months without let up, bringing quotations down to $40 to $43 as the year closed. Some sales were reported at even a lower figure. Domestic bleached sulphite in the same period dropped from a published average of $65 down o $45 per ton. The total deflation in bleached sulphite prices is further emphasized in a comparison with $75 and $80 prices prevailing in the peak of 1928 and 1929.

Prices on foreign strong unbleached sulphite dropped during the year from $43 to $32, with the actual bottom unofficially reported at $28 and $29 for a small amount. This compares with a high of $58 in 1927.

Kraft pulp had gone pretty well to the bottom when the year 1931 opened and hovered close to $30 a ton during the entire twelve months, altho touching below that point occasionally.

Prime Canadian groundwood pulp went off during the year from $25 per ton down to $18.

The pressure of kraft pulp imports made itself known in the United States by bringing about one of the most serious disturbances the kraft paper industry has ever known. The source of kraft pulp supplies shifted further to Europe during the year, Sweden and Finland increasing their shipments of unbleached kraft pulp to the United States by 10,000 and 20,000 tons respectively. Meanwhile Canadian exports for this grade fell off 30,000 tons. American industry closed down some of its kraft production in deference to the heavy pressure of foreign selling.

Despite a fairly stable demand for kraft paper, prices were anything but stable. Normal marketing gave way almost entirely to the most drastic competition, entirely lacking in organization. Some new tonnage coming in during the year further aggravated the case. Kraft paper prices dropped from a prevailing $65 per ton at the beginning of the year to $52.50, a record low, but later firmed up again. The problem is not yet solved apparently, the competition remaining basically one of foreign pulp imports against domestic production.

The fine papers held up very well in 1931 in light

of general conditions. This may or may not be a good omen, that is, it may mean simply that this group has been able to ride along undisturbed to a greater distance before falling. There was some indication at the close of the year that further deflation might be looked for in the fine paper group. However, price concessions in the fine paper group have been made in other forms, notably by greatly improving quality without increasing price.

Book paper production, which has shown a steadily rising curve of production, now surpassing the total production of news print in the United States, fell off sharply in 1931. Prices declined from 10% to 15%, this factor, together with reduced operation, serving markedly to curtail earnings. Increasing competition was noted during the year between soda and sulphite book papers, this being explained in part at least by the resistance of soda pulp to any such radical decline as the sulphite group has had to undergo.

In the paperboard group volume held fairly well, but prices were shot. The 5% annual growth that the paperboard industry has come to accept as natural phenomena in the course of the last decade failed to materialize in 1930, and, altho capacity had been installed to meet the expected increase, the business was lacking. Further, in addition to new machine installations, existing plants increased their total capacities by modernization. Production in 1931 was estimated at 3,303,000 tons. This compares very favorably, in view of generally depressed business conditions, with the 1930 production of 3,372,000 tons, and the 1929 high of 3,580,000 tons.

Price in the paperboard group, which began a decline in 1927, continued the downward march in 1931, falling off an average of 6.9% from the 1930 levels. For example, test liners which sold for $65 per ton in 1927, sold for $40.50 in 1930, and went down to $33.50 in 1931.

News Print Deflates

The news print industry in 1931 felt the full effects of the speculative situation it has been building for the past decade. Canada, which is now by far the world's largest producer of this grade, and the chief source of supply for United States newspapers, operated at about only one half of capacity in 1931 and had various serious troubles in unemployment, threatened government interference, etc. The news print industry had, during the year, to withstand the double shock of lessened consumption brought about by a material decrease in advertising, and further declines in price.

Recognition of the failure of the News Print Institute of Canada to pool orders and control prices under the stress of the times was one notable event of the year. Some important principals withdrew their subscription to group action on the plea that others were not adhering to agreements. Prices sagged further as the year wore on with 1932 contract prices set at $53 per ton, delivered New York. Pacific Coast prices, which usually differ, but nevertheless react to, the Atlantic Coast prices went down to $50, quoted by Pacific Coast mills. On the Western shore, however, the full pressure of European tonnage was felt and some quotations on Scandinavian news print were reported as low as $38 per ton, delivered California ports.

There was a decided further trend toward mergers in the Canadian industry. The most notable event in this direction was the creation of the Consolidated Paper Corporation, which served to bring under one head a number of scattered interests exercising control of a total daily capacity of 1944 tons. The Consolidated is considered as only the forerunner of a tremendous merger of Canadian interests which would take care of about one half of the total news print consumption on the North American continent. Negotiations in this direction have been proceeding for some months.

When England departed from the gold standard in September, thereby precipitating similar action on the part of many other nations, a new topic of discussion was introduced to the industry. Domestic producers of the duty free commodities, such as news print and wood pulp, contended that they were being subjected to serious losses due to the ability of the foreign manufacturers to lower their quotations and still be paid undiminished returns in terms of their own currency. As time wore on this became a bitterly contested point and developed into some cleavage within the American pulp and paper industry, with the self-contained or domestic producers on the one hand, and the converting mills on the other. The subject of tariff was also revived and active steps were taken by the proponents to capitalize on the situation and push thru some legislation for the unprotected group, while the opponents of tariff—the mills which buy pulp and therefor wish to keep the foreign market free—also marshalled their forces to offset the protectionist movement.

Again the Tariff

The subject of depreciated exchange and the tariff completely outshadowed the question of Russian pulpwood imports which had been the bone of contention in earlier months. Russian pulpwod imports during the year were comparatively negligible. However, the pressure on pulpwood prices, launched the previous year by the combined weight of threatened Soviet competition and declining consumption, served to depress pulpwood prices in the Atlantic and Lake states to unusually low levels. With paper consumption declining many of the Eastern mills which generally carry pulpwood stocks ahead turned to liquidation of these reserves and withheld current purchases. Prices of $6 to $10 per cord were reported in Eastern regions where $12 to $18 had ruled before. However, it is not believed that these distress prices will hold as business gets back to a more normal flow.

Severe curtailment of the Pacific Northwest lumber industry served to dry up the log supply of pulpwood normally flowing from the logging operations, but unemployment turned many men to emergency production of pulpwood in cordwood form, prices ranging down to less than $5 per cord for peeled wood delivered at the chipper.

In all the outlook for the future of the paper industry is difficult, if not futile, to predict. Indications are that the present low price levels will continue, that is, that business in general is adjusting itself to a new scale, a new normal, with the peak prices of 1927-1929 remaining only as artificial mountains of the past. Some commodities have over-liquidated and can be expected to strengthen a bit. Others have the painful process still ahead of them. Fixed charges, difficult of liquidation without excessive pain, show some tendency nevertheless to adjust themselves to the new levels. The American standards of living ought reasonably to be expected to continue, and with these standards the high consumption of paper and paper products. The outlook then may be hazarded as one of a gradual resumption in demand, but with all business adjusted to generally lower levels.

UNITED STATES

Pulpwood Consumption and Wood Pulp Production

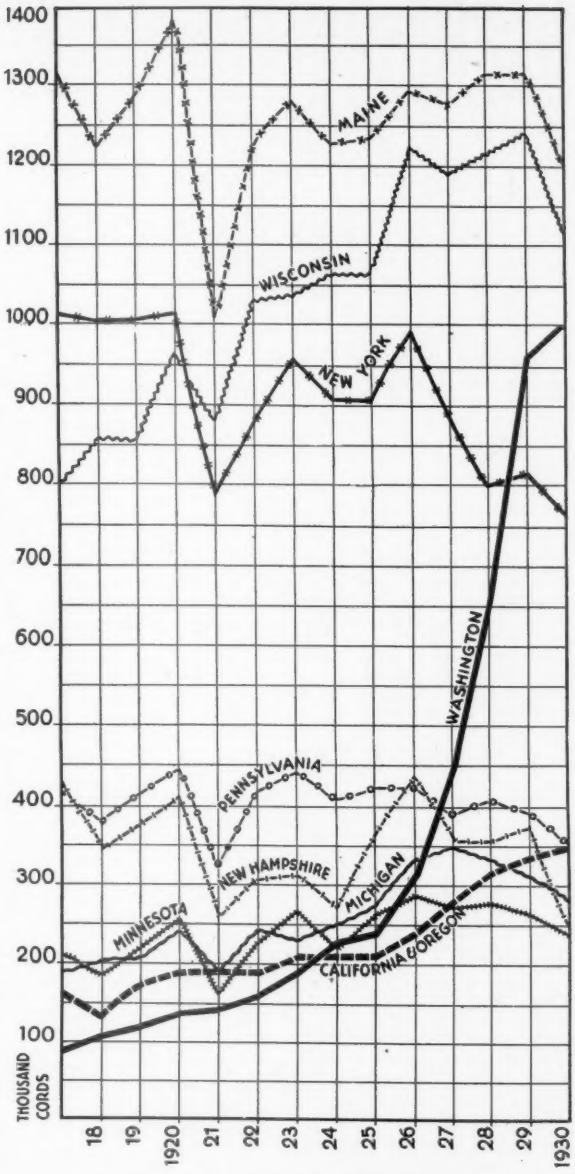
Quantity and Cost of Wood Consumed Quantity of Pulp Produced By States: 1930, 1929, 1928, 1927 and 1926

Source: Bureau of the Census—Forest Products: 1930

(This table presents statistics for each state for which separate figures can be given for all years without disclosing data for individual establishments.

	Year	Wood Consumed — Quantity (cords)	Wood Consumed — Cost (f.o.b. mill) — Total	Wood Consumed — Cost (f.o.b. mill) — Average per cord	Wood Pulp produced (tons of 2,000 lbs.)
United States	1930	*7,195,524	$88,683,502	$12.32	4,630,308
	1929	7,645,011	100,054,139	13.09	4,862,885
	1928	*7,160,100	97,024,190	13.55	4,510,800
	1927	6,750,935	95,452,365	14.29	4,313,403
	1926	6,766,007	101,229,402	14.96	4,394,766
Individual States:					
Maine	1930	1,203,377	19,833,906	16.48	905,088
	1929	1,311,577	22,281,806	16.99	981,433
	1928	1,309,988	22,602,624	17.25	970,690
	1927	1,273,268	21,850,760	17.16	942,162
	1926	1,298,357	22,619,373	17.42	945,790
Wisconsin	1930	1,168,789	14,710,447	12.59	701,011
	1929	1,233,962	15,632,746	12.67	733,617
	1928	1,225,630	15,869,381	12.95	720,781
	1927	1,199,615	15,174,013	12.65	690,921
	1926	1,224,443	15,711,665	12.83	712,565
Washington	1930	1,000,001	6,883,484	6.88	566,137
	1929	956,132	6,527,585	6.83	523,948
	1928	651,657	4,781,566	7.34	349,107
	1927	445,664	3,588,506	8.05	268,349
	1926	305,787	2,775,122	9.08	199,164
New York	1930	763,451	14,200,286	18.60	596,219
	1929	826,312	15,987,105	19.35	662,988
	1928	802,115	14,962,631	18.65	633,182
	1927	872,780	16,882,733	19.34	710,227
	1926	990,701	19,350,874	19.53	822,131
Louisiana	1930	422,710	2,385,417	5.64	243,915
	1929	459,553	2,671,881	5.81	246,590
	1928	413,602	2,429,247	5.87	226,708
	1927	349,272	2,056,671	5.89	179,878
	1926	258,439	1,674,651	6.48	137,571
Pennsylvania	1930	352,775	5,703,253	16.17	188,943
	1929	397,680	6,930,456	17.43	213,083
	1928	405,276	7,016,656	17.31	218,598
	1927	398,021	7,171,606	18.02	216,587
	1926	425,684	7,171,764	16.85	233,258
New Hampshire	1930	242,756	4,527,619	18.65	138,332
	1929	376,014	7,375,455	19.61	212,774
	1928	351,349	6,843,713	19.48	198,587
	1927	358,376	6,958,956	19.42	200,324
	1926	431,138	8,969,404	20.80	248,600
Virginia	1930	378,421	3,812,361	10.07	216,365
	1929	375,179	4,143,285	11.04	206,050
	1928	342,813	3,942,477	11.50	189,925
	1927	316,032	3,775,393	11.95	170,630
	1926	317,058	4,032,829	12.72	163,506
Michigan	1930	279,986	3,752,080	13.40	193,418
	1929	313,477	4,422,317	14.11	178,015
	1928	331,697	4,634,972	13.97	196,203
	1927	351,688	4,712,584	13.40	193,539
	1926	331,570	5,136,117	15.49	200,604
Minnesota	1930	230,471	2,688,294	11.66	182,456
	1929	266,320	2,780,312	10.44	189,664
	1928	282,691	3,365,081	11.90	194,399
	1927	281,156	3,397,201	12.08	191,220
	1926	288,390	3,269,903	11.34	190,454
Vermont	1930	24,224	362,784	15.02	25,047
	1929	25,486	447,168	17.55	26,307
	1928	20,081	330,702	16.47	19,831
	1927	31,795	549,741	17.29	32,562
	1926	48,554	937,464	19.31	46,376
Groups of States:					
California and Oregon	1930	351,053	2,963,962	8.44	248,592
	1929	340,745	3,157,499	9.27	256,546
	1928	308,264	3,094,255	10.04	213,407
Other States	1930	*734,110	6,116,411	8.33	395,407
	1929	717,474	6,909,782	9.63	402,378
	1928	*663,612	6,176,561	9.31	347,012

*Includes data for a small quantity of spent licorice root with no market value.

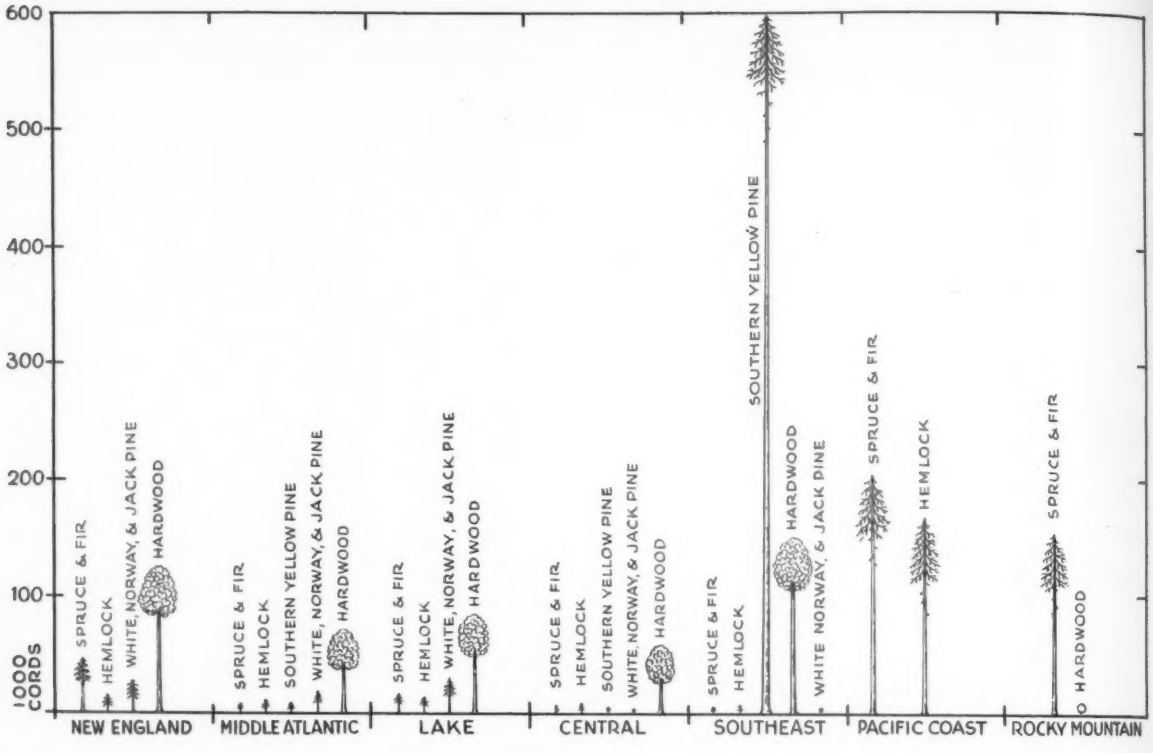


TREND OF PULPWOOD CONSUMPTION

This graph shows the trend of pulpwood consumption in the leading states from 1917 to 1930 inclusive.

Western States Supplying More Pulpwood

The consumption of pulpwood may be used as an index to show the trend toward the Western states in meeting the demand for domestic supplies. Washington and Oregon both show increases in the past five years, the rise of the former being really phenomenal. On the other hand, the states of Maine, Wisconsin and New York have in the same period remained relatively constant with a downward tendency. It is particularly significant that the Western states registered increases in 1930, over 1929, when decreases were recorded uniformly elsewhere.



Stand of Principal Kinds of Wood Now Used In Pulp Manufacture By Regions
(Quantities in 1,000 cords)

Region—	Total Softwoods	Spruce and Fir	Hemlock	Southern Yellow Pine	White, Norway and Jack Pine	Tamarack	Total Hardwood
Total	1,329,982	431,242	206,825	623,525	66,404	1,986	499,263
New England	79,701	45,030	10,467	-----	24,190	14	125,977
Middle Atlantic	38,357	5,931	9,100	8,751	14,575	-----	76,272
Lake	57,359	17,526	12,619	-----	25,242	1,972	85,272
Central	15,873	610	3,962	10,453	848	-----	54,241
Southeast	610,534	781	3,883	604,321	1,549	-----	157,228
Pacific Coast	372,655	205,861	166,794	-----	-----	-----	-----
North Rocky Mt.	48,174*	48,174*	-----	-----	-----	-----	-----
South Rocky Mt.	107,329	107,329	-----	-----	-----	-----	273

*Includes Western Hemlock.
Source—From the "Weekly Business Review" of the American Paper & Pulp Association.

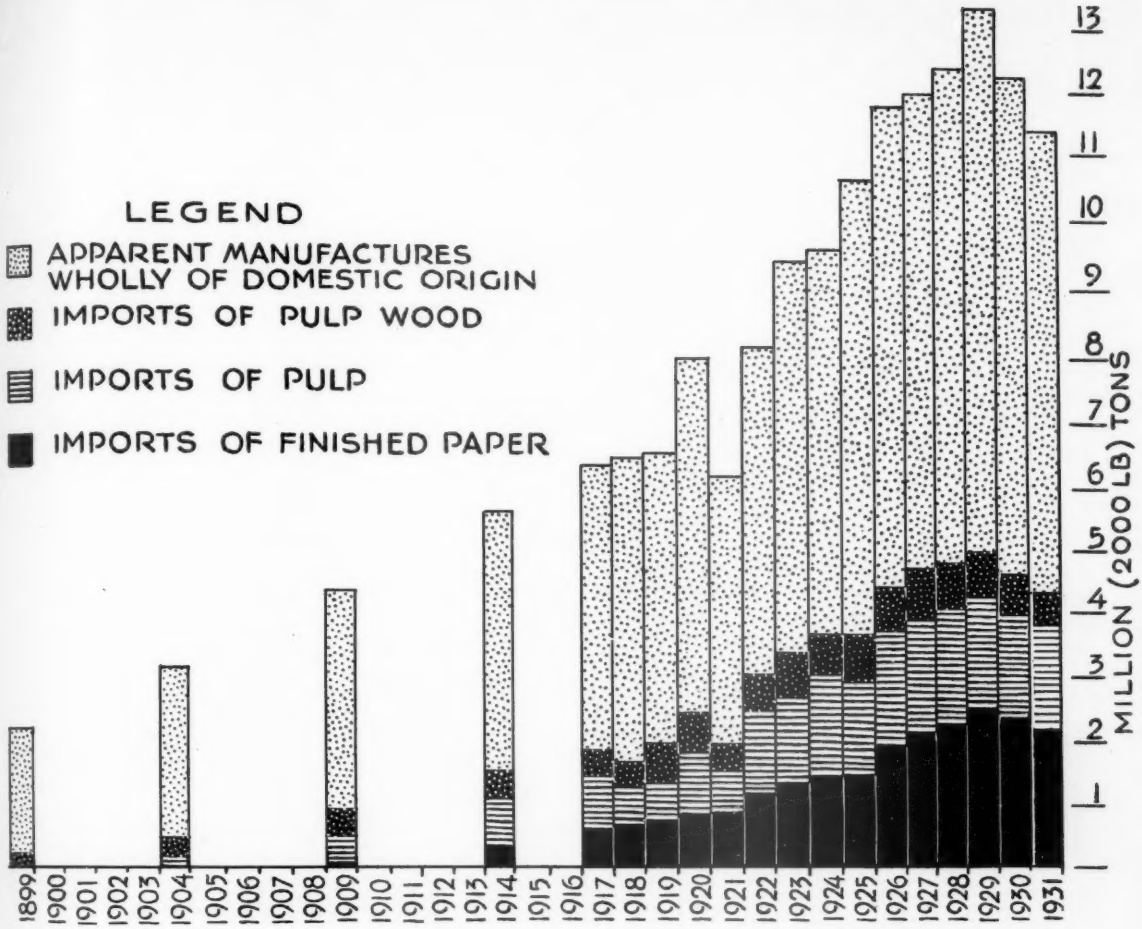
Pulpwood Resources of the United States

Recently revised estimates of the total pulpwood resources of the United States have been made by the United States Forest Service. The regional and species totals are given in the accompanying table:

Under current conditions of manufacture spruce, fir and hemlock are used in the mechanical and sulphite processes. The national stand of these species, placed at 638,067,000 cords, is more than seventy times their combined cut for pulpwood and lumber in 1929. More than one-half the spruce-fir-hemlock stand is, however, concentrated in the Pacific Northwest, where it is available for use as pulpwood for a rapidly growing local industry. The supplies in the older producing regions, although adequate for the industry as now constituted if it is all available for pulp manufacture, is not sufficient to support much added production. Insofar as present wood uses for mechanical and sulphite pulp are concerned future expansion of domestic production must occur in the West. The spruce and fir stand in the two Rocky Mountain regions is large compared with that in the eastern regions; it is not now being used in pulp manufacture.

The southern pine resources, now used exclusively in the sulphate process or in adaptations of it, is concentrated in the southeast. The stand is thirty times the 1929 use for lumber and pulpwood, of which the former use is by far the greater. Insofar as its use for pulpwood is concerned, there is a wholly ample supply not only for any expected domestic demand, but also for a large export trade.

As a pulpwood resource the stand of other pines and



PRIMARY SOURCE OF PAPER CONSUMED IN THE UNITED STATES

This chart traces back to the stump paper of all grades consumed in the United States. Imports of finished paper, represented by the solid black areas, are first noticeable in 1914 and grow steadily and rapidly thereafter. Total paper imports coincide very closely with imports of news print from Canada.

Pulp imports in this chart are computed ton for ton with finished paper. It will be noticed that pulp imports have been increasing steadily in recent years.

Pulpwood imports show comparatively little variation in the thirty years covered in this study, a fact largely accounted for by the bulk of the commodity, which limits economical transportation possibilities. The rule of thumb computation of two cords of wood per ton of paper is used here.

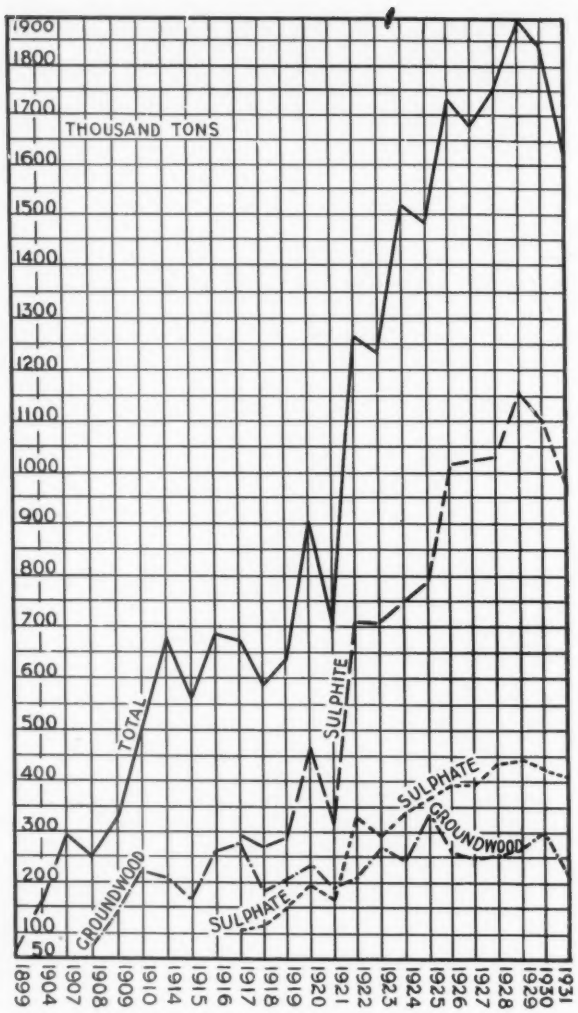
The apparent manufactures of wholly domestic origin include only that portion of the total paper tonnage which traces directly back to United States sources. In terms of actual new pulpwood requirements this figure must be sharply discounted to allow for the annual production of more than 4,000,000 tons of paperboard, the great bulk of which is manufactured from waste papers and materials other than wood.

tamarack are particularly important in the Lake States where they are pulped extensively for sulphate pulp. Jack pine, not now used extensively for lumber, is a valuable pulpwood resource and sufficiently extensive to permit greater production in the future if competition permits.

The hardwood supply is adequate for the domestic requirements for soda pulp. It is, however, concentrated in the East.

These statistics of resources plainly reveal the reasons underlying the regional shifts in pulp manufacture in the United States: the sulphate industries to the South and sulphite pulp manufacture to the West. The vast resources available for pulp in each case are evidence enough of future possibilities.

The situation is not so bright in the case of mechanical pulp. The available supplies of spruce and fir seem adequate, but they are concentrated in regions where pulp manufacture is not yet developed or, as in the case of the Pacific Coast, where these species are scattered in the heavier stands of Douglas fir and hemlock. The use of Western Hemlock in mechanical pulp may be expected to increase; but the extent of the increase can not be foreseen at the present time. In 1929 hemlock comprised ten per cent of the wood used in the mechanical process.



UNITED STATES IMPORTS OF WOOD PULP
Trends According to Grades—1899 to 1931

UNITED STATES
Wood Pulp Imports—Grade Totals—1899-1931
(In Tons of 2,000 Lbs.)

Year	Total	Groundw'd	Total Sulphite	Total Sulphate
1931	1,596,374	210,656	963,195	[7]422,523
1930	1,832,877	299,232	1,106,487	[4]427,158
1929	1,887,505	273,461	1,159,974	[5]455,070
1928	1,762,325	249,199	1,062,243	[6]450,883
1927	1,675,718	245,599	1,035,985	394,134
1926	1,731,413	303,759	1,034,590	393,064
1925	1,483,614	331,092	790,211	362,311
1924	1,522,715	245,920	934,403	342,392
1923	1,228,982	267,194	712,533	249,255
1922	[1]1,258,961	215,811	712,088	330,337
1921	697,100	190,744	328,270	178,086
1920	906,297	233,148	473,175	199,974
1919	636,016	202,253	282,707	151,056
1918	578,209	185,478	270,211	122,520
1917	677,841	279,073	289,210	109,558
1916	683,765	262,517	.....	.....
1915	568,379	174,056	.....	.....
1914	675,564	217,256	.....	.....
1913	541,455	167,889	.....	.....
1912	539,790	185,443	.....	.....
1911	562,424	262,681	.....	.....
1910	506,776	224,184	.....	.....
1909	370,023	145,362	.....	.....
1908	[2]250,485	[3] 71,217	.....	.....
1907	296,778	.....	.....	.....
1906	199,702	.....	.....	.....
1905	170,867	.....	.....	.....
1904	179,324	.....	.....	.....
1899	57,335	.....	.....	.....

[1] Includes 725 tons of soda September to December only.
[2] Includes 100,535 tons of wood pulp, grade unclassified, imported Jan. 1 to June 30.
[3] July 1 to Dec. 31.
[4] Includes 4,309 tons of soda pulp and 516 tons of "other pulp."
[5] Includes 5,617 tons of soda pulp and 1,159 tons of "other pulp."
[6] Includes 7,535 tons of "other pulp," which includes also soda pulp.
[7] Includes 3,421 tons of soda pulp.
Source: U. S. Department of Commerce.

†PULPWOOD IMPORTS
(Unit: 1 Cord—128 Cu. Ft.)

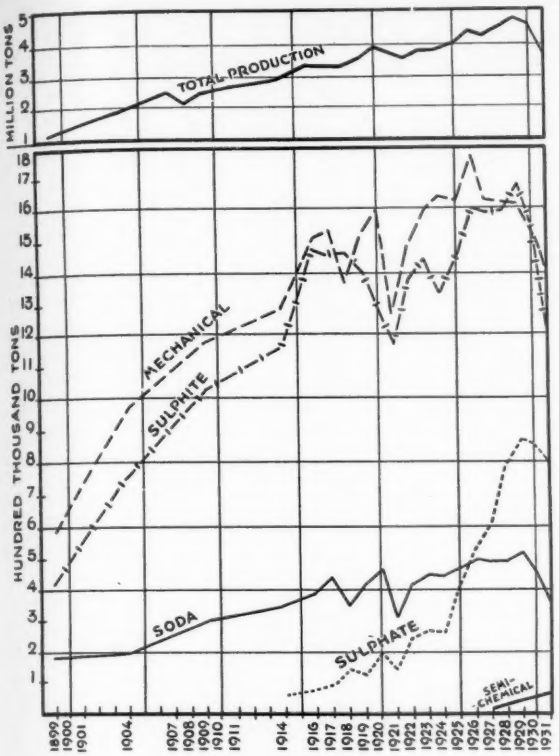
	Rough	Peeled	Rossed	Total
1931	186,613	817,926	17,128	1,021,667
1930	331,158	1,234,678	16,365	1,582,201

†Preliminary report. Source: Department of Commerce, Bureau of Foreign and Domestic Commerce.

UNITED STATES
Wood Pulp Imports—By Grades and Countries of Origin—1930
(Tons of 2000 Lbs.)

	COUNTRY OF ORIGIN						
	Canada	Finland	Germany	Norway	Sweden	Others	Totals by Grades
Mechanical Wood Pulp	254,476	13,930	961	15,265	13,644	1,237	299,513
Sulphite—Total	393,742	120,062	72,958	63,793	431,875	24,066	1,106,496
Unbleached	190,836	111,847	21,332	22,630	382,160	15,848	744,653
Bleached	202,906	8,215	51,626	41,163	49,715	8,218	361,843
Sulphate—Total	85,480	39,672	346	15,332	277,607	4,182	422,619
Unbleached	72,975	37,227	90	14,639	271,785	3,795	400,511
Bleached	12,505	2,445	256	.....	.....	387	22,108
All Other Pulp	4,258	29	233	0	0	284	4,804
Total (By Countries)	737,956	173,693	74,498	94,390	723,126	29,769	1,833,432

*Preliminary Report. Source: Department of Commerce, Bureau of Foreign and Domestic Commerce.



UNITED STATES
Domestic Production of Wood Pulp
Trends According to Principal Grades—1899-1931

Domestic Production of Wood Pulp

The 30-year rise in the total production of wood pulp in domestic mills reflects the expanding utility of paper as a commodity. It also reflects the importance of our pulpwood forests as a desirable foundation for domestic employment. While there has been some competition between grades of pulp, notably sulphite and sulphate (kraft) pulp, this point is dimmed in the increasing competition between foreign and domestic production. The tables and graphs illustrating domestic production should be studied concurrently with similar data of the opposite page covering pulp imports.

UNITED STATES
Total Domestic Woodpulp Production, by Grades, From 1899 to 1931
In Tons of 2,000 Lbs.

Year	Total	Groundwood	Sulphite	Soda	Sulphate
1931§	3,880,000	1,415,000	1,217,000	378,000	805,000
1930	4,630,308	1,560,221	1,534,295	504,229	952,282
1929‡	4,770,600†	1,612,000	1,676,000	514,600	859,600
1928	[1]4,510,800	1,615,689	1,595,951	488,641	780,552
1927	[2]4,313,403	1,618,638	1,588,132	487,478	607,172
1926	[3]4,394,766	1,774,192	1,599,776	496,920	523,878
1925	[4]3,962,217	1,629,689	1,447,191	472,647	412,690
1924	[5]3,723,266	1,643,283	1,336,551	440,697	302,735
1923	[6]3,788,672	1,580,553	1,448,690	445,162	314,267
1922	[5]3,521,644	1,483,787	1,374,319	419,857	243,681
1921	[6]2,875,601	1,267,382	1,166,926	300,533	140,760
1920	3,821,704	1,583,914	1,585,834	463,305	188,631
1919	[7]3,517,952	1,518,829	1,419,829	411,693	120,378
1918	3,313,861	1,364,504	1,456,633	350,362	142,362
1917	3,509,939	1,535,953	1,451,757	437,430	84,799
1916	3,435,001	1,508,139	1,466,402	387,021	73,439
1914	[8]2,893,150	1,293,661	1,151,327	347,928	52,641
1911	2,686,134	*	*	*	*
1910	2,533,976	*	*	*	*
1909	2,495,523	1,179,266	1,017,631	298,626	----
1908	2,118,947	*	*	*	*
1907	2,547,879	*	*	*	*
1904	1,921,768	968,976	756,976	196,770	----
1899	1,179,525	586,374	416,037	177,114	----

§A. P. & P. A. estimate.

‡Preliminary tabulation, Census of Manufactures.

*Not reported separately.

†Includes 68,000 tons of screenings, as follows: mechanical, 11,400; chemical, 56,600.

[1]Includes data for screenings, as follows: Mechanical, 4,701 tons; sulphite, 37,093; sulphate, 6,327.

[2]Includes data for screenings, as follows: Mechanical, 8,229 tons; sulphite, 35,433; sulphate, 3,919.

[3]Includes data for screenings as follows: Mechanical, 9,944 tons; sulphite, 41,601; sulphate, 3,918.

[4]Includes data for screenings as follows: Mechanical, 17,670 tons; sulphite, 44,105; sulphate, 2,922.

[5]Includes data for some screenings.

[6]Includes data for screenings as follows: Mechanical, 12,759 tons; sulphite, 37,463; sulphate, 1,784.

[7]Includes data for screenings as follows: Mechanical, 12,220 tons; chemical, not shown by process, 35,003.

[8]Includes data for screenings as follows: Mechanical, 11,769 tons; chemical, not shown by process, 35,824.

Source: U. S. Department of Commerce.

UNITED STATES
Total Estimated* Pulp Production—1931

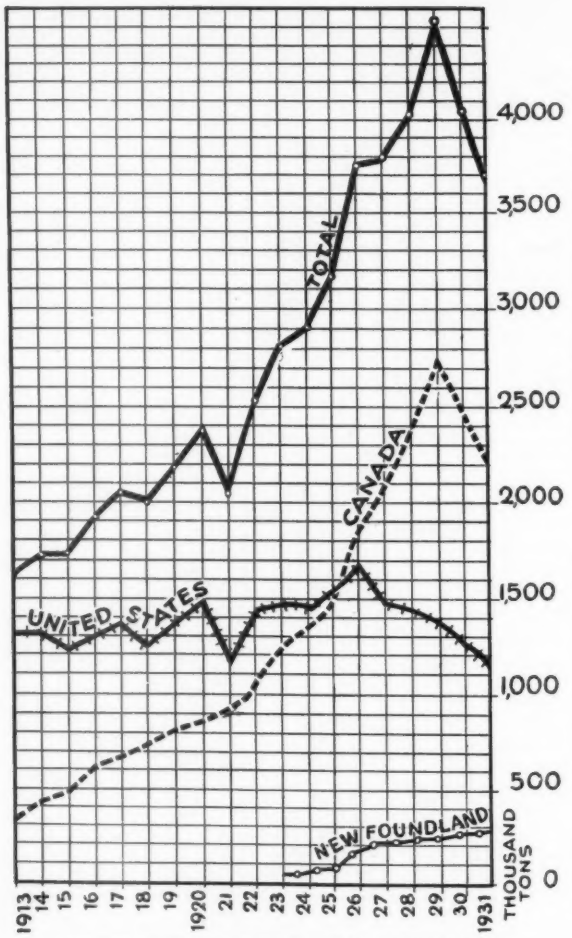
Grade—	Tons: 2,000 lbs.
Mechanical	1,415,000
Sulphite	1,217,000
Sulphate	805,000
Soda	378,000
Semi-chemical and Screenings	65,000
Total	**3,880,000**

*A. P. & P. A. estimate.

UNITED STATES
Wood Pulp Imports — By Grades and Countries of Origin — 1931
(Tons of 2,000 lbs.)

Grade—	COUNTRY OF ORIGIN: Canada	Finland	Germany	Norway	Sweden	Others	Totals by Grades
Mechanical Wood Pulp	181,037	12,438	153	6,765	10,275	----	**210,668**
Sulphite—Total	306,479	119,155	77,691	31,590	391,715	27,746	**954,376**
Unbleached	99,237	109,163	24,77	11,418	336,765	18,872	**600,332**
Bleached	207,242	9,992	52,814	20,172	54,950	8,874	**354,044**
Sulphate—Total	59,021	62,373	1,057	4,911	290,346	5,868	**423,576**
Unbleached	36,081	60,110	897	4,883	282,495	5,868	**390,334**
Bleached	22,940	2,263	160	28	7,851	----	**33,242**
All Other Pulp	3,423	----	----	----	----	----	3,423
Total (By Countries)	**549,960**	**193,966**	**78,901**	**43,266**	**692,336**	**33,614**	**1,592,040**

Source—Import Statistics, U. S. Department of Commerce. Preliminary report, subject to minor revision.



NEWS PRINT PRODUCTION TRENDS IN NORTH AMERICA

Problems In News Print

It is probable that the news print industry still faces some difficult times. The business depression which has increased in severity in the two and one-half years following the peak reached in 1929 has been a very material factor in directly reducing the consumption of news print. Newspaper advertising has fallen off in volume and circulation of papers has decreased. Some statistics have been presented to show that circulation has not dropped, but this argument has rested upon selected cases and has omitted from consideration important consolidations of newspapers and the field as a whole. In addition, newspapers have had a new and serious form of competition in the radio to contend with in getting an adequate share of advertising budgets.

Purchasing power everywhere has been severely reduced thru wage cuts, unemployment, or lost time. This condition has reflected itself to the manufacturing and merchandising groups, accounting for decreased sales and consequently diminution—and in many cases, elimination—of advertising budgets. The effect has been an increased pressure upon newspapers for lower advertising rates, and this pressure has in turn been transmitted to the paper mills by the publishers in an attempt to get cheaper news print and pass on the loss. There exists among many newspaper publishers a distinct feeling that news print is still too high, despite the severe price reductions of the past three years.

NEWS PRINT IN CANADA, 1913-1931
(Tons)

Year	Production	Exports	Balance at Home
1913	350,000	*	*
1914	415,000	*	*
1915	489,000	*	*
1916	608,000	*	*
1917	686,000	*	*
1918	735,000	*	*
1919	803,000	708,000	95,000
1920	876,000	762,000	114,000
1921	808,000	709,000	99,000
1922	1,082,000	960,000	122,000
1923	1,266,000	1,138,000	128,000
1924	1,353,000	1,219,000	134,000
1925	1,522,000	1,402,000	120,000
1926	1,882,000	1,732,000	150,000
1927	2,087,000	1,882,000	205,000
1928	2,381,000	2,207,000	174,000
1929	2,729,000	2,511,000	218,000
1930	2,504,000	2,331,000	173,000
1931	2,221,000	2,008,000	213,000

*No data.

NEWS PRINT IN THE UNITED STATES, 1913-1931
(Tons)

Year	Production	Imports	Exports	Balance at Home
1913	1,305,000	220,000	43,000	1,482,000
1914	1,313,000	315,000	61,000	1,567,000
1915	1,239,000	368,000	55,000	1,552,000
1916	1,315,000	468,000	76,000	1,707,000
1917	1,359,000	559,000	94 000	1,824,000
1918	1,260,000	596,000	97,000	1,759,000
1919	1,375,000	628,000	111,000	1,892,000
1920	1,512,000	730,000	49,000	2,193,000
1921	1,225,000	792,000	17,000	2,000,000
1922	1,448,000	1,029,000	26,000	2,451,000
1923	1,485,000	1,309,000	16,000	2,778,000
1924	1,481,000	1,357,000	17,000	2,821,000
1925	1,530,000	1,448,000	23,000	2,955,000
1926	1,684,000	1,851,000	19,000	3,516,000
1927	1,486,000	1,984,000	12,000	3,458,000
1928	1,418,000	2,157,000	11,000	3,564,000
1929	1,392,000	2,421,000	19,000	3,794,000
1930	1,282,000	2,280,000	10,000	3,552,000
1931	1,157,000	2,067,000	10,000	3,214,000

IMPORTS OF EUROPEAN NEWS PRINT INTO THE U. S.
January 1, 1920—December 31, 1931 (Tons)

	Sweden	Germany	Finland	Norway	Other	Total
1920	18,875	21,066	3,244	5,916	1,337	50,438
1921	48,932	38,938	22,661	20,193	4,613	135,337
1922	51,812	32,838	26,205	17,292	4,741	132,888
1923	64,570	52,290	41,782	33,829	7,798	200,269
1924	60,827	38,840	35,639	17,259	3,238	155,803
1925	65,518	25,862	21,683	17,030	2,421	132,514
1926	46,020	12,884	34,292	6,176	554	99,926
1927	66,920	7,096	29,330	16,796	1,919	122,061
1928	55,718	9,170	40,237	10,864	418	116,407
1929	50,717	9,741	32,293	3,498	124	96,373
1930	69,268	13,788	41,913	9,326	.....	134,295
1931	66,688	21,910	47,992	14,444	35	151,069
Total 12 years	665,865	284,423	377,271	172,623	27,198	1,527,380
Percent	43.6	18.6	24.7	11.3	1.8	100.0

The Canadian situation is not favorable. There is a definite movement toward placing Canadian production into fewer and stronger hands with the prime object of controlling production and market. Progress on that score was effected during 1931 with the creation of the Consolidated Paper Corporation, but this merger is admittedly only the stepping stone toward a more tremendous grouping that is now, and has for some months been, in process of negotiation.

Production of news print in the United States is slipping steadily, and faces possible complete extinction unless given aid. European news print exports to the United States have become an increasingly vexatious factor, this group being an "outlaw" insofar as their conforming to the trade conventions of the North American group is concerned. However, European capacity is not great, nor does it have the apparent possibilities for expansion sufficient to encroach too seriously upon the North American market.

Imports of News Print Paper Into the United States, 1931

Imports of news print paper into continental United States in 1931 were 900,000 tons more than domestic production and constituted 64% of consumption. This was the same ratio as in 1930 and 1929—although production and consumption were much greater in the two preceding years than in 1931.

Canada supplied 85% of the news print imported into the United States during 1931. Newfoundland 8% and European countries 7%. Two-thirds of the Canadian news print came through the customs districts of Michigan, St. Lawrence and Buffalo, with considerable quantities through numerous other ports of entry. News print from Newfoundland went entirely to Atlantic and Gulf ports, with the exception of some 4,000 tons each to Los Angeles, Oregon and Washington. The coming of 36,000 tons of news print from Newfoundland to New York made the latter much the largest port of entry from that country. Forty per cent of the Swedish importations were taken by Atlantic and Gulf points, but 25,000 tons went to the Pacific Coast. New Orleans was by far the largest single U. S. point of entry for Swedish news print in 1931. Some 62% of the news print coming into the United States from Finland and 55% of that from Germany, was through the port of New York, while 40 per cent of the news print from Finland went to the Pacific Coast. Altogether the Pacific Coast was the destination of some 46,000 tons of news print shipped from Newfoundland and Europe in 1931.

World Production, News Print Paper, 1931

The best compilation The News Print Service Bureau so far has been able to get together upon world production of news print paper in 1931 is given below. It is a composite of reports direct to the office, information from foreign correspondents and data secured by the U. S. Department of Commerce. All figures represent 2,000 lb. tons.

	Tons
Canada	2,221,000
United States	1,157,000
United Kingdom	719,000
Germany	510,000
Newfoundland	295,000
Sweden	265,000
Japan	258,000
France	243,000
Finland	241,000
Norway	104,000
Russia	100,000 (?)
Netherlands	79,000
Italy	77,000
Austria	62,000
Spain	62,000
Switzerland	49,000
Belgium	44,000
Czechoslovakia	42,000
Poland	27,000
Estonia	17,000
Mexico	15,000
Denmark	10,000
Latvia	3,000
Total	6,600,000

NEWS PRINT PRODUCTION IN NORTH AMERICA—1923-1931

Source—News Print Service Bureau

	PRODUCTION				SHIPMENTS		
	Per Day Rating Tons	Per Month Actual Tons	Actual Tons Per Operat'g Day	Per Cent Rating (Totals per Mo.)	Tons Per Month	Per Cent Rating	MILL STOCKS
CANADIAN MILLS							
1931—December	12,376	165,173	9,341	51.3	165,017	51.3	54,214
Twelve Months	12,376	2,220,775	9,948	58.1	2,202,623	57.6	54,214
1930—Twelve Months	11,676	2,504,147	9,907	69.4	2,494,694	69.1	36,777
1929—Twelve Months	10,326	2,728,827	9,531	85.5	2,722,381	85.3	24,946
1928—Twelve Months	.....	2,381,102	.....	.....	2,399,030	.....	19,139
1927—Twelve Months	.....	2,086,949	.....	.....	2,062,749	.....	38,117
1926—Twelve Months	.....	1,881,737	.....	.....	1,878,746	.....	14,345
1925—Twelve Months	.....	1,522,217	.....	.....	1,525,150	.....	18,414
1924—Twelve Months	.....	1,352,994	.....	.....	1,344,757	.....	21,954
1923—Twelve Months	.....	1,266,232	.....	.....	1,257,521	.....	15,123
UNITED STATES MILLS							
1931—December	5,738	93,861	4,236	62.9	93,550	62.7	32,709
Twelve Months	5,705	1,157,497	4,272	65.5	1,156,631	65.4	32,709
1930—Twelve Months	5,441	1,282,372	4,491	76.0	1,268,065	75.2	32,061
1929—Twelve Months	5,612	1,392,276	4,611	80.0	1,409,239	81.0	19,023
1928—Twelve Months	.....	1,417,572	.....	.....	1,399,425	.....	34,469
1927—Twelve Months	.....	1,485,495	.....	.....	1,474,521	.....	20,877
1926—Twelve Months	.....	1,684,218	.....	.....	1,684,790	.....	12,030
1925—Twelve Months	.....	1,530,318	.....	.....	1,534,345	.....	16,238
1924—Twelve Months	.....	1,481,425	.....	.....	1,480,819	.....	23,757
1923—Twelve Months	.....	1,485,000	.....	.....	1,477,332	.....	23,669
UNITED STATES AND CANADIAN MILLS							
1931—December	18,114	259,034	13,577	55.0	258,567	54.9	86,923
Twelve Months	18,081	3,378,272	14,220	60.4	3,359,254	60.1	86,923
1930—Twelve Months	17,117	3,786,519	14,398	71.5	3,762,759	71.1	68,838
1929—Twelve Months	15,938	4,121,103	14,142	83.6	4,131,620	83.8	43,969
1928—Twelve Months	.....	3,798,674	.....	.....	3,798,455	.....	53,608
1927—Twelve Months	.....	3,572,444	.....	.....	3,537,270	.....	58,994
1926—Twelve Months	.....	3,565,955	.....	.....	3,563,536	.....	26,375
1925—Twelve Months	.....	3,052,535	.....	.....	3,059,495	.....	34,652
1924—Twelve Months	.....	2,834,419	.....	.....	2,825,576	.....	45,711
1923—Twelve Months	.....	2,751,232	.....	.....	2,734,853	.....	38,792

NORTH AMERICAN PRODUCTION

	Canada	United States	Newfoundland	Mexico	Total
1931—December	165,173	93,861	24,514	1,224	284,772
Twelve Months	2,220,775	1,157,497	294,983	15,195	3,688,450
1930—Twelve Months	2,504,147	1,282,372	287,259	14,286	4,088,064
1929—Twelve Months	2,728,827	1,392,276	255,501	18,680	4,395,284
1928—Twelve Months	2,381,102	1,417,572	230,745	16,981	4,046,400
1927—Twelve Months	2,086,949	1,485,495	202,852	14,137	3,789,433
1926—Twelve Months	1,881,737	1,684,218	186,471	13,412	3,765,838
1925—Twelve Months	1,522,217	1,530,318	96,588	12,681	3,161,804
1924—Twelve Months	1,352,994	1,481,425	64,648	11,500	2,910,567
1923—Twelve Months	1,266,232	1,485,000	63,906	12,000	2,827,138

OUR FOREIGN TRADE IN PAPER PRODUCTS 1931

By N. S. MEESE
Assistant Chief, Paper Division
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BOTH our domestic and export commerce in paper and paper products during 1931 had their full share of discouragement. Practically all over the world, and in all groups, the actual consumption of paper seems to have decreased, leaving idle capacity in every producing country for the carrying of which the industry had to pay. Further, prices in many lines declined and in this country efforts to reduce costs of production to an equivalent amount did not meet with any signal success, in spite of the various expedients attempted. Decreases in sales were relatively considerably greater than reduction in output, a factor adding to an already difficult condition. Our exports of paper and paper products in 1931 as compared with 1930 are an indication of the effect of the depression on the paper trade of the world.

Paper is one of the many commodities that suffered from the economy drive all over the world. A necessity, it none the less was consumed in smaller quantities and in cheaper qualities. Our own exports, depending largely on the factor of quality, dropped from over $30,300,000 in 1930 to less than $22,500,000 in 1931, a decrease of about 25%. The year 1931 marked the lowest point in value in our paper exports since 1916. In contradistinction to this decrease in value, however, the actual volume of these exports fell only 7 per cent so far as can be determined from tonnage data available.

While it would serve no purpose to point out in the text the particular items suffering the greatest decrease in exports as shown in Table I, the causes of some of these shrinkages in both tonnage and value may not be so evident. The lack of agreement between the shrinkage in dollars and shrinkage in tons points definitely to a single cause, namely, demand by foreign consumers for the cheaper grades in relatively greater quantities. While complete data on countries of destination for 1931 exports are as yet not available, it also appears probable that the total quantity going to countries which have taken most of the more expensive papers has decreased, while the reverse is probably true of those which have heretofore taken almost entirely the cheaper grades. Export markets, in other words, have become almost entirely price markets.

In some instances the cause of a part of the difference was a decline in the price of the goods shipped without any material change in the quality. This was the case in our exports of some kinds of paper board. The quantity increased by about 20%, but its value decreased by about 11%.

Among the brighter spots were the greaseproof and

TABLE No. 1
Exports of Paper and Paper Manufactures from the United States
Calendar Years 1930 and 1931

Class	Quantity 1930 Pounds	1930 Value	Quantity 1931 Pounds	1931 Value
Newsprint	20,408,360	$ 812,231	19,305,341	$ 604,913
Book paper, not coated	31,846,407	2,155,175	19,024,407	1,154,285
Cover paper	2,192,168	343,489	1,712,589	259,448
Greaseproof and waterproof	3,805,193	741,557	4,634,010	974,505
Overissue newspapers	171,312,274	1,335,118	208,112,807	1,538,564
Wrapping paper	44,247,669	2,759,441	28,613,496	1,629,216
Surface-coated paper	7,567,037	866,763	5,075,141	580,346
Tissue and crepe paper	4,761,586	919,036	2,978,500	505,978
Toilet paper	7,420,413	811,976	7,035,353	725,741
Paper towels and napkins	3,910,747	451,077	3,516,892	351,535
Box board of paperboard or strawboard	60,370,000	1,498,914	53,033,294	1,181,853
Bristols and bristol boards	2,313,956	219,473	1,675,121	158,493
Other paper board	33,636,482	1,606,638	40,338,696	1,416,779
Sheathing and building paper	18,798,454	635,791	15,025,881	450,175
Fiber insulating lath or board (*)	62,498,770	2,008,503	37,627,048	1,200,085
Wallboard of paper or pulp (*)	30,090,007	999,307	18,499,261	591,051
Blotting paper	3,114,885	378,802	1,852,020	211,125
Filing folders, index cards and other office forms	1,642,026	604,543	1,300,146	348,450
Papeteries (fancy writing paper)	650,598	147,351	272,975	69,754
Other writing paper	21,064,051	2,070,040	14,664,660	1,309,004
Paper hangings (wallpaper) (**)	3,227,269	465,409	2,363,157	287,531
Paper bags	11,249,662	892,538	11,894,306	826,524
Boxes and cartons	22,714,876	1,370,631	14,481,547	931,775
Envelopes	2,229,246	372,264	1,546,317	237,404
Vulcanized fiber sheets, rods, and tubes	4,577,711	1,139,978	3,453,791	961,930
Cash register and adding machine paper	4,418,949	423,694	8,798,278	686,105
Other paper and products		4,272,020		3,147,154
Total		$30,301,759		$22,419,743

(*) square feet. (**) rolls.

waterproof group with an increase of nearly 22% in tonnage and 32% in value of exports in 1931. This appears to have been due almost entirely to the great and rapid strides made by manufacturers of transparent cellulose sheeting in increasing the numbers of articles retailed in wrappers of this material. The value of this sheeting as a means of increasing the attractiveness of retailed merchandise has been responsible for this growth. And speaking of wrappings, overissue newspapers, used very largely for wrapping merchandise in the Far East, also showed a growth in quantity exported by nearly 22% and a corresponding increase in value. This has probably been at the expense of Kraft and some of the better grades of wrapping paper the continued use of which may have been just too much of a burden for persons having a relatively small per capita purchasing power, but may also have been in part owing to the increase in sales by the northern European countries in markets in which we could no longer compete at the laid-down prices then existing.

Some grades of paper board and the item of paper bags also show an increase in the actual tonnage exported, but a decrease in total value of those exports. Boards particularly, are one of the major export items in the paper schedule and an analysis of shipments so far as it can be made, shows a distinct trend toward increased consumption of the cheaper grades of board apparently in the lighter weights. Also in the board group, but in a class by themselves, are the wall and insulating boards which showed a combined decrease of nearly 40% in quantity. Although this group has shown phenomenal growth in the last five years and exports have shown an even more rapid rise, the second year of the depression brought with it a worldwide weakening of building activity and a general suspension of construction programs with a consequent sharp drop in the consumption of these lumber substitutes. At the same time, and for the same reason, the various industrial uses of these boards decreased.

Briefly, exports have suffered mainly from the natural shrinkage in the volume of business done in all lines as a consequence of the depression and to a lesser extent over the last few months of the year because of the exchange situation. Spot purchases in the United States by consuming countries ceased almost instantly in October where the items wanted could be purchased at an advantageous exchange rate in countries which had abandoned the gold standard. This was reflected in the shrinkage particularly during the final quarter of 1931 in several staple lines.

Our exports of paper base stocks also decreased in value in 1931 as compared with 1930. Over the past four years rag exports have dropped materially, but lats year the major item of decrease was pulpwood. (See Table 2.)

TABLE No. 2
Exports of Paper Base Stocks from the United States in 1930 and 1931

Class—	—1930— Quantity	Value	—1931— Quantity	Value
Pulpwood*	130,242	$1,265,096	81,091	$ 624,592
Sulphite pulp	34,973	1,670,784	49,792	2,251,130
Soda pulp	2,025	140,774	1,436	92,643
Other pulp	11,428	258,995	2,080	62,869
Rags and other stock	31,122	842,489	32,132	683,265
Total		$4,178,138		$3,714,499

*Cords. All other items in short tons.

In many instances exports of pulpwood from the United States represent shipments from woodlands near the boundary to mills located not far away but across the border and having a market for their product in the United States. With that market reduced in consuming power, the consumption of wood from the United States was materially reduced and reflected itself directly in our export figures.

Our imports tell a story similar in some respects to that of our exports, as may be seen in Table 3.

TABLE No. 3
Imports of Paper and Paper Goods into the United States in 1930 and 1931

Class—	—1930— Quantity	Value	—1931— Quantity	Value
Newsprint ..... Tons	2,279,652	$131,800,333	2,066,906	$112,169,627
Other printing, n. e. s. ..... Lbs.	2,600,992	122,540	3,000,176	93,963
Greaseproof and waterproof ..... "	1,032,932	293,779	357,162	75,390
Kraft wrapping ..... "	7,584,206	296,864	3,996,789	169,190
Other wrapping ..... "	2,540,362	143,070	2,903,203	135,768
Writing & drawing ..... "	3,406,660	831,378	2,476,275	476,813
Papeteries ..... "	.....	*263,422	.....	252,974
Surface coated ..... "	1,857,748	762,115	1,099,282	538,394
Uncoated, decorated or embossed ..... "	*92,200	*28,969	145,895	38,059
Tissue: Weighing not over 6 lbs. per ream ..... "	*730,693	*471,147	1,392,481	884,892
Other ..... "	*275,002	*111,422	613,631	246,503
Pulpboard in rolls "	42,814,553	970,095	23,262,937	495,453
Paperboard, pulpboard n. e. s. and cardboard "	14,027,449	332,852	14,153,985	296,302
Leather brd, testboard, wallb'rd "	1,615,178	103 315	2,343,665	121,407
Cigarette paper & books ..... "	14,168,393	4,290,682	20,777,285	5,396,469
Hanging paper (wall paper) .. "	2,144,884	618,343	1,034,251	304,513
Duplex decalcomania, unprinted ..... "	502,276	118,542	405,900	84,786
Paper boxes ..... "	.....	1,251,792	.....	968,845
Paper mache and pulp manufactures ..... "	.....	543,395	.....	417,976
All other paper and manufactures ..... "	.....	2,966,919	.....	2,455,814
Total		147,451,158		125,623,138

*Beginning June 18, 1930.

Among the major items in the paper schedule which shrunk perceptibly in import value were newsprint, writings, greaseproof, Kraft, pulpboard in rolls, and hangings. The reduction in imports of newsprint, which enters duty free, can be accounted for directly by the decrease in advertising space used during the year and the reduction in the size of Sunday editions all over the country, with the minor item of a small percentage of reduction in the circulation of certain media. It amounted to approximately 10%, a drop practically identical with the total percentage decrease in the per capita consumption of paper in the United States during the year which fell from 201 pounds to 181 pounds, and this in the face of three price reductions during the calendar year.

Writing papers decreased in import value largely by reason of trade association activities through a direct mail advertising campaign for the purpose of increasing the sale of our domestic paper. This, combined with the work of trade groups looking to the protection of our industry by preventing the misclassification of imported articles, gave a larger proportional share of the market to our own manufacturers. The import market for certain grades of packaged papers was not materially reduced since these are largely low-priced papers selling to a rather limited class of purchasers.

The reduced importations of greaseproof and waterproof papers were probably in large part due to the rapid growth of the use of transparent cellulose as a wrapping material and the consequent ability of the producers to decrease costs and hence the sale price of this material. As to Kraft, the industry here was dis-

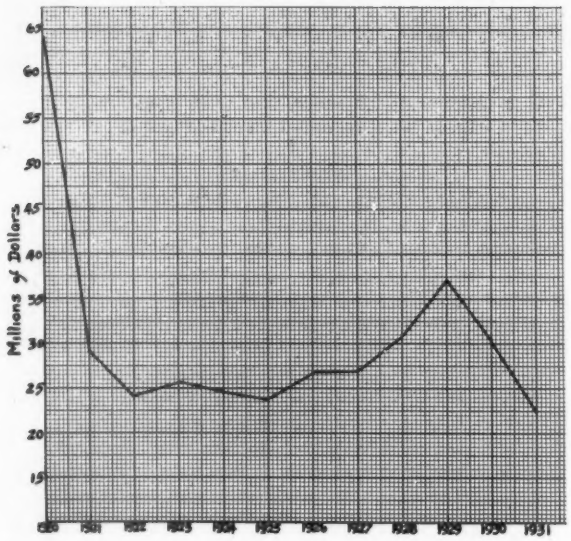

Fig. 1—Fluctuations in value of exports of paper and paper products from the United States from 1920 to 1931.

rupted by an extremely difficult price situation which made it more profitable for consumers to buy the domestic product than the imported.

Hanging paper imports were affected by the efforts of the industry here to promote the sale of the domestic product and also by the inroads of other methods of interior decoration. At the same time the greater expense attendant upon using imported wall paper was looked at somewhat askance by the consumer, whose point of view was affected by the economic situation.

Importations of cigarette paper in bobbins and books increased about 50% in quantity and 25% in value in 1931 as compared with 1930. In view of the lack of any increase in the consumption of cigarettes in 1931 as compared with 1930 and the fact that the reserve stock of this paper in the plants of the cigarette manufacturers was greatly depleted two years ago, it is believed that these added imports were entered only for the purpose of replenishing these stocks of raw materials for the industry. At the same time the prevailing recent low prices of French cigarette paper have been an added inducement to larger purchases as a possible measure of insurance.

The value of imports of paper base stocks which include pulpwood, pulp, and rags, has been no exception to the rule. (See Table 4.)

TABLE No. 4
Imports of Paper Base Stocks into the United States in 1930 and 1931

Class—	—1930— Quantity	Value	—1931— Quantity	Value
Pulpwood .....Cords	1,582,201	$17,017,489	1,021,667	$11,211,298
Pulp:				
Mechanical . Short tons	267,171	7,146,290	188,086	4,498,022
Sulphite unbleached— ..... Short tons	665,049	33,193,598	540,478	23,033,069
Sulphite bleached — ..... Short tons	322,886	22,721,929	319,518	18,887,719
Sulphate unbleached— ..... Short tons	357,551	16,452,381	344,612	12,035,030
Sulphate bleached — ..... Short tons	19,533	1,468,599	29,683	2,267,090
Other pulp Short tons	4,308	303,997	3,309	186,730
Total		$98,304,283		$72,118,958

Our mills have had to grapple with shrinkage markets for the finished product and hence a need for reducing output in proportion. The actual number of cords of pulp wood entering the country dropped by about 35%, while the only item of pulp which did not show a loss during the year was bleached sulphate. In almost every instance the decrease in the total value of these imports was greater in proportion than the decrease in quantity, a direct result of rapidly falling prices and in some small degree to the currency situation in the Scandinavian countries during the last quarter of the year. For instance, imports of bleached sulphite and Kraft pulps from Finland and Sweden increased in quantity by nearly 12%, but the value decreased by over 15%, marking the downward sweep of prices in those countries where markets had to be found at any price.

Importations of rags decreased nearly 60% in quantity and 72% in value during the year, marking a turn toward the use of a larger relative proportion of the less expensive papers made almost entirely of wood fiber.

Summary

The entire fabric of our foreign trade in pulp, paper, and paper manufactures in 1931 has been severely affected by the world depression. Probably the one big factor which made its influence so keenly felt was the increasing spread between capacity and consumption. (See Fig. 2.) In no line was it possible to cancel without notice all orders for new equipment and contracts for buildings. At the beginning of the depression it was not believed that its duration would be long and plans made to cover a three or five year production program based on what were then normal increases in population and per capita consumption could not be abandoned summarily. This same condition affected the trade of other producing countries as well. Practically all manufacturers of paper and paper goods were placed in the position of being forced to maintain operations at or above a definite ratio to capacity in order to meet costs and at the same time to face a shrinkage consumption of their wares. This situation is in part being met by producers by an effort to simplify problems of distribution and merchandising, although the merchants' problems have also been intensified by reason of keener competition and lowered per capita consumption.

In turning to the foreign field for additional outlets

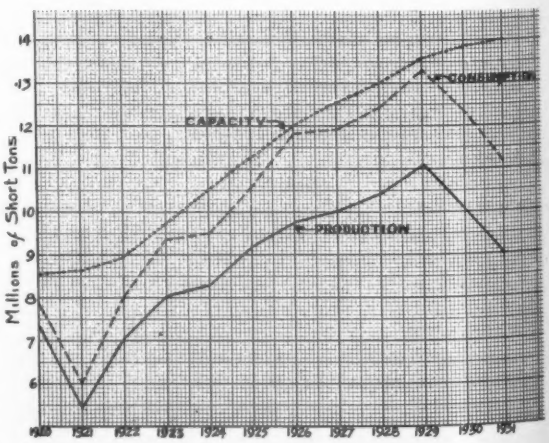

Fig. 2—Relation of production, consumption, and machine capacity in the paper industry in the United States from 1920 to 1931.

for their products, our paper and board manufacturers have been made to recognize that quality is their most important talking point. They have not been able to compete abroad with countries whose production costs were considerably less than our own, nor, since September, 1931, has the currency situation in certain countries of Europe made it easier to compete elsewhere. These conditions, in addition to tariff problems of major importance, have added to the difficulty of merchandising abroad.

At the present time the two bright spots in the world of paper marketing are the serious attempts of manufacturers to analyze basic market data, both domestic and foreign, with a view to selling only at a reasonable profit, or, in other words, rationalizing their marketing programs, and the changing attitude of the trade associations. These organizations appear to be increasingly cognizant of the fact that their function in the economic fabric is to assist their industries as a whole and not the interests of only their own members to the exclusion of all others.

In the international aspect of our trade in paper products, it is to be regretted that no way has been found to cooperate with the industry in certain countries abroad either directly or through their trade associations leading to an exchange of statistical information. If this could be done, sufficient data could be given the industry as a whole to bring about an automatic control of production and decrease the spread between it and consumption. Meantime, measures to control production internationally in a number of lines by means of cartels seem to have been unsuccessful.

It is not believed by the industry that the present international exchange situation will change immediately, nor, on the other hand, is it expected to become permanent. Increases in imports from those countries which abandoned the gold standard were noticeable, but the tendency to increase production costs following the drop in exchange rates also tends to eliminate this temporary advantage, particularly to firms exporting pulp to the United States.

At this time the year 1932 appears to indicate readjustment in practically all lines and particularly in the costs of marketing. The industry in the United States has an excellent opportunity to revise its domestic marketing methods to advantage and at the same time to lay the foundations for the sale of its quality products abroad when conditions warrant increased credit extensions and an expansion of business.

INTERCOASTAL WATER BORNE SHIPMENTS OF PAPER*

Calendar Year 1930

(In cargo tons of 2,240 pounds)

WEST BOUND

Shipments FROM:	To— San Diego	Los Angeles	San Francisco	Portland	Seattle	Tacoma	Vancouver, Wash.	Total
Portland, Maine	29	4,819	3,206	71	477	170	.....	8,772
Boston, Mass.	.....	3,602	3,794	526	213	76	.....	8,211
New York, N. Y.	411	11,558	16,211	704	781	357	.....	30,022
Philadelphia, Pa.	257	8,500	16,978	1,508	6,987	198	.....	34,428
Baltimore, Md.	.....	2,171	1,145	141	163[2]	.....	.....	3,619
Norfolk, Va.	10	857	732	18	167	2	.....	1,786
Charleston, S. C.	.....	280	268	.....	31	.....	.....	579
Mobile, Alabama	221	1,270	761	122	623	66	.....	3,063
New Orleans, La.	22	2,132	3,342	196	710	28	80	6,510
Houston, Texas	.....	121	55	.....	52	.....	.....	228
Total	950	35,310	46,492	3,286	10,204	897	80	.....
Grand Total								97,219

[2]Includes 11 tons to Bellingham and 10 tons to Everett, Wash.

EAST BOUND

Shipments TO:	From— Los Angeles	San Francisco	Portland[5]	Grays Harbor[6]	Seattle	Tacoma[7]	Longview	Puget Sound[8]	Total
Portland, Maine	61,515	.....	.....	.....	.....	.....	.....	.....	61,515
Boston, Mass.	10,720	6,103	3,505	4,618	11,132	16,993	14,470	12,175	79,716
Providence, R. I.	.....	1	59	.....	7	464	.....	.....	531
New York, N. Y.	2,199	6,313	16,387	2,009	1,225	30,262	7,346	7,613	73,354
Philadelphia, Pa.	195	699	2,675	5,482	271	5,074	7,122	10,626	32,144
Baltimore, Md.	6	615	487	2,671	794	2,194	.....	8,873	15,640
Virginia Ports[1]	14	.....	427	1,979	.....	.....	.....	797	3,217
Florida Ports[2]	699	207	1,342	.....	2	.....	394	.....	2,644
Mobile, Ala.[3]	159	59	131	117	.....	810	.....	.....	1,276
New Orleans, La.	.....	446	326	.....	12	584	.....	110	1,478
Texas Ports[4]	.....	510	634	.....	11	.....	.....	.....	1,155
Total	75,507	14,953	25,973	16,876	13,454	56,381	29,332	40,194	272,670

[1]Combines shipments of 1,727 tons to Newport News and 1,490 tons to Norfolk, Va.

[2]Includes 1,191 tons to Jacksonville and 1,423 tons to Tampa, Florida.

[3]Includes 117 tons to Charleston, S. C., and 169 tons to Savannah, Ga.

[4]Total Texas shipments include 85 tons to Beaumont, 45 tons to Galveston, 904 tons to Houston and 121 tons to Corpus Christi.

[5]Includes 147 tons from Astoria, Oregon, and 30 tons from St. Helens, Oregon.

[6]Includes 250 tons from Willapa Harbor, Wash.

[7]Includes 40 tons from Olympia, Wash.

[8]This total combines shipments of 5,955 tons from Everett, 1,100 tons from Anacortes, 3,509 tons from Bellingham, 9,625 tons from Port Angeles and 20,005 tons from Port Townsend, Wash.

Source: United States Shipping Board, Bureau of Research, Maritime Records Division.

*General classification includes all pulp, paper, and paper products.

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- Motor Cooling System
- Calender Cooling System
- Trim Conveying
- Locker Room Ventilating
- Machine Hoods
- Sheet Metal Work
- Felt Drying Systems

- Loft Drying Systems
- Recovery Systems
- Fans—Filters
- Blowers
- Unit Heaters
- Exhausters
- Machine Room Systems

For complete cooperation in this important phase of pulp and paper manufacturing, mill executives rely upon the comprehensive experience and service available through the Ross organization to help them intelligently plan and produce equipment that will accomplish the results they require.

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UNITED STATES
Paper Production—By Principal Grades—1923-1931
(Tons of 2,000 lbs.)

Year	Total Production (Incl. "All Others")	Writing	Board	Uncoated Book	Newsprint	Wrapping	Tissue
1923	8,029,482	377,029	2,792,832	1,049,201	1,521,080	1,184,234	250,616
1924*	8,300,000	392,000	2,850,000	1,090,000	1,481,424	1,235,000	265,000
1925	9,182,204	473,804	3,286,580	1,162,848	1,563,318	1,292,049	281,000
1926*	9,750,000	500,000	3,650,000	1,193,000	1,684,000	1,420,000	306,000
1927	10,002,070	508,808	3,773,608	1,269,321	1,485,100	1,525,305	316,070
1928	10,403,338	550,472	4,061,803	1,334,326	1,415,450	1,467,271	348,174
1929	11,140,235	607,590	4,451,187	1,497,912	1,409,169	1,605,783	387,811
1930	10,169,140	574,681	4,060,716	1,389,500	1,226,086	1,580,489	362,355
1931*	9,162,000	450,000	3,850,000	1,145,000	1,157,500	1,430,000	360,000

Source: Compilation for years 1923 to 1927 inclusive by the American Paper & Pulp Association. Statistics for 1928, 1929 and 1930 from U. S. Department of Commerce, Bureau of the Census, Forest Products 1930.
*Estimate for 1931 by A. P. & P. A.

UNITED STATES
Total Estimated* Paper Production—1931

Grade—	Tons: 2,000 lbs.
Newsprint, Standard	1,157,500
Hanging Paper	76,600
Catalog Paper	102,000
Book Paper (Uncoated)	1,145,000
Cover Paper	18,000
Writing Paper	450,000
Wrapping Paper	1,430,000
Boards	3,850,000
Tissue Paper	360,000
Absorbent Paper	74,000
Building Paper	420,000
Other Papers	78,900
Total	**9,162,000**

*A. P. & P. A. estimate.

UNITED STATES
Paper Consumption, Production, Imports, Exports—1899-1931
(Tons of 2,000 lbs.)

Year—	Total Consumption	Domestic Production	Imports	Exports†
1899	2,158,000			
1904	3,050,000			
1909	4,224,000	4,216,708		36,093
1914	5,496,000	5,270,047	343,306	65,850
1917	6,256,000	5,919,647	562,903	168,928
1918	6,387,000	6,051,523	600,445	176,298
1919	6,493,000	6,190,361	630,281	224,416
1920	7,861,000	7,334,614	734,967	124,079
1921	6,054,000	5,356,317	799,273	49,926
1922	8,003,000	7,017,800	1,068,835	99,487
1923	9,387,000§	8,100,000§	1,376,847	88,997
1924	9,521,000§	8,200,000§	1,414,969	93,825
1925	10,571,000	9,001,742	1,486,338	96,964
1926	11,769,000	9,794,086§	1,890,826	117,691
1927	11,905,000	10,002,070	2,009,645	106,516
1928	12,329,000	10,403,338	2,189,882	122,591
1929	13,449,000	11,140,235	2,476,077	167,771
1930	12,322,000	10,124,400	2,328,000	130,000
1931	11,184,000	9,162,000§	2,142,000	120,000

†Figures for 1909 to 1917 are by fiscal years ending June 30; by calendar years from 1917 to 1929.
§Estimates by American Paper and Pulp Association.
Source—Compiled by Pacific Pulp and Paper Industry from the following: United States Department of Agriculture, Bulletin No. 1241; United States Department of Commerce, Foreign Commerce and Navigation of the U. S., and Census of Manufactures for 1927; American Paper and Pulp Association Figures.

Estimated U. S. Per Capita Consumption of Paper

The estimated total United States production of all grades of paper in 1931 was off about 10% as compared with that of 1930, and the total United States estimated consumption in 1931 was about 9% below the level of 1930. The 1931 per capita consumption in this country showed an estimated drop of approximately 10% from the level of 1930. Compared with 1929 the per capita consumption showed a drop of about 18% in 1931.

This decrease in per capita consumption was somewhat larger in the cultural grades which depend, in the most part, upon advertising, printing and publishing operations for their demand. The accompanying table shows how much the demand has fallen during the past two years.

The consumption of the various grades was computed by taking the United States production of each grade, adding the imports and deducting the exports. Stocks in hand were not considered in making these compilations.

UNITED STATES
Annual Per Capita Consumption of Paper—1919-1931
(In Pounds)

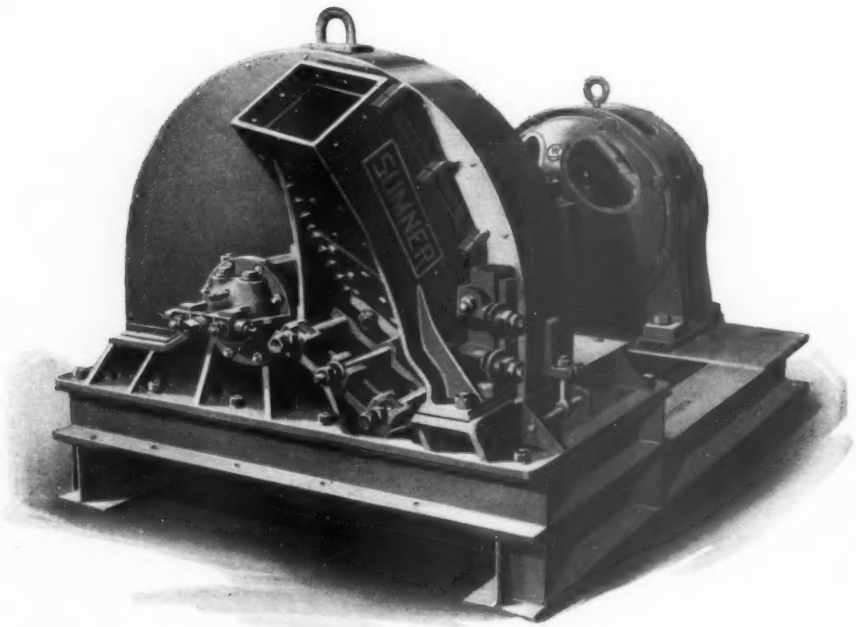
Year	Cultural Papers: News	Cultural Papers: Uncoated Book	Cultural Papers: Writing	Paper Board	Mechanical Papers: Wrapping and Bag	Mechanical Papers: Total all Grades
1919	35	16	6.2	35	18.3	122
1920	41	19	7.1	42	21.5	144
1921	37	13	4.3	32	15.2	113
1922	45	18	6.3	43	18.7	146
1923	50	19	6.7	50	21.7	164
1924	50	19	7.0	50	21.9	165
1925	51	20	8.2	57	22.4	181
1926	60	20	8.5	62	24.1	198
1927	58	22	8.5	63	25.6	200
1928	59	23	9.0	67	26.7	208
1929	62	24	9.8	73	26.1	221
1930	58	22	9.2	66	25.4	201
1931	52	19	7.3	62	23.0	181

A. P. & P. A. Estimates.

The paper industry, like most other mass-production industries, has been geared up to handle a rapidly growing demand. The natural growth of the population is no longer going to be a big factor in increasing the total demand for any product because the rate of growth of our population is slowing up and it is estimated that it will become stationary between 1945 and 1960 if the present factors of population growth do not change appreciably.

In the past few years, business could depend upon the rapid expansion of population to furnish from 15 to 25% more customers every year. The markets of the future offer no such prospect and with so much surplus capacity available it will necessitate the most careful analysis of the consuming markets.

• WATCH •
Sumner's New Machines



PROGRESS in industry becomes possible only through better methods or improved machinery.

Sumner's NEW design chippers are demonstrating this today at Bellingham, Everett, Aberdeen and Longview.

WE MANUFACTURE FOR
THE PULP INDUSTRY A COMPLETE LINE OF

Steam Splitters	Chippers	Screens	Washers
Disc or Hand Barkers	Crushers	Chip Dusters	Drives
Knot Saws	Grinders	Wet Machines	Cylinder Moulds

▼ ▼ ▼

SUMNER IRON WORKS, Everett, Wash.

Pioneer Pacific Coast Builders of
SAW MILL and PULP MILL MACHINERY

UNITED STATES
Exports of Paper—By Principal Grades
1929-1930-1931*
(Tons: 2,000 lbs.)

Kind—	1931	1930	1929
Newsprint	9,653	10,204	18,696
Book Paper, Uncoated	9,512	15,915	18,909
Cover Paper	856	1,096	1,027
Wrapping Paper	14,307	22,124	21,942
Tissue and Crepe	1,489	2,381	2,399
Toilet Paper	3,518	3,710	3,516
Paper Towels and Napkins	1,759	1,956	1,809
Boxboard	26,517	30,185	26,730
Sheathing and Building	7,513	9,399	11,248
Papeteries	136	325	428
Other Writing Paper	7,332	10,532	13,995
Boxes and Cartons	7,241	11,357	14,060
Envelopes	773	1,115	1,211
Cash Register and Adding Machine	4,399	2,290	2,754

*Preliminary report. Source: Department of Commerce, Bureau of Foreign and Domestic Commerce.

Paper Used by Uncle Sam

More than 9,820,000 pounds of paper especially prepared under the supervision of government officials were delivered to the Bureau of Engraving, Treasury Department, during the fiscal year ended June 30 for the printing of paper currency, Government bonds, checks and revenue and postage stamps, according to statistical and oral information made available December 11 at the Treasury Department.

Internal revenue stamps such as those affixed to cigarettes and playing cards called for more paper than any other class of printing, using 5,248,696 pounds or 84,800,380 sheets and 388 rolls; even paper money, which called for 2,143,224 pounds, required less than the revenue stamps, the information shows. Additional information made available follows:

The distinctive paper used by the Federal government for its money, stamps and checks is manufactured by contracting firms under the direction of officials of the Treasury to insure fulfillment of specifications. This paper is received by the Paper Custody Division of the Public Debt Service which dispenses it to the Bureau of Engraving and Printing, holding this bureau accountable for each sheet delivered.

Paper money, of which large amounts have been issued this past year, called for more than 84,841,000 sheets of the special currency paper to be delivered to the Bureau of Engraving and Printing during the last fiscal year. Postage stamp paper amounted to 2,092,525 pounds, United States bond paper totaled 30,860 pounds and paper for checks amounted to 203,856 pounds.

Pulps Used in Different Papers

Kind of Paper—	Total	Mechanical	Sulphite	Sulphate	Soda	Other Pulps
Newsprint	100	80	20	----	----	----
Book	75	10	35	----	30	25
Writing	73	----	66	2	5	27
Wrapping	97	11	29	57	----	3
Boards	22	4	8	10	----	78
All Other	60	21	28	5	6	40

In conversion 7 per cent is added for pulp losses in paper manufacture.

From Pulpwood for Oct. 1931

UNITED STATES
Box Board—Production, Shipments, Etc.

Year and Month—1931	Operation: Capacity†	Operation: Operated Inch Hours	Operation: Per Cent of capacity	Production: Capacity	Production: Output	Production: Per Cent of capacity Short Tons	Production: New orders	Production: Unfilled orders end of month
January	11,659,128	7,520,155	64.5	329,628	211,691	64.2	211,782	55,744
February	10,313,844	7,344,874	71.2	291,962	205,785	70.5	198,296	50,838
March	11,659,128	8,175,282	70.1	329,628	226,011	68.6	222,511	49,326
April	11,659,128	7,902,826	67.8	329,628	230,537	69.9	224,021	45,451
May	11,210,700	8,726,745	77.8	316,950	232,020	73.2	236,173	49,968
June	11,659,128	8,200,104	70.3	329,628	224,110	68.0	223,990	50,630
July	11,659,128	8,113,998	69.6	329,628	222,927	67.6	221,048	49,698
August	11,659,128	7,685,282	65.9	329,628	213,614	64.8	215,752	47,206
September	11,210,700	7,946,434	70.9	316,950	221,684	69.9	235,382	61,327
October	12,107,556	7,839,948	64.8	342,306	218,157	63.7	218,527	61,365
November*	10,762,272	6,637,103	61.7	304,272	186,776	61.4	181,500	62,933
December*	11,659,128	5,802,210	49.8	329,628	163,539	49.6	138,042	36,345
Total (Year 1931)	**137,218,968**	**91,894,961**	**67.0**	**3,879,836**	**2,556,851**	**65.9**	**2,527,024**	----
Total (Year 1930)	**139,179,840**	**96,843,592**	**69.6**	**3,917,436**	**2,699,595**	**68.9**	**2,685,373**	----

Year and Month—1931	Shipments	Stock of box board end of mo.	Consumption of waste paper: Capacity Short Tons	Consumption of waste paper: Consumed	Consumption of waste paper: Per Cent of capacity	Stocks of waste paper end of month: Total	Stocks of waste paper end of month: At plants Short Tons	Stocks of waste paper end of month: In transit & unshipped purchases
January	209,660	74,482	305,734	199,229	65.2	232,209	197,699	34,510
February	203,202	77,065	270,457	191,331	70.7	226,736	191,507	35,229
March	224,023	79,053	305,734	210,590	68.9	219,147	167,846	51,301
April	227,806	81,784	305,734	206,571	67.6	192,504	167,478	25,026
May	231,746	82,058	293,975	227,125	77.3	222,021	182,812	39,209
June	223,328	82,840	305,734	208,513	68.2	220,128	169,570	50,558
July	221,980	83,787	305,734	213,686	69.9	213,058	166,006	47,052
August	218,244	79,157	305,734	200,138	65.5	195,591	148,042	47,549
September	221,261	79,580	293,975	205,084	69.8	194,415	149,029	45,386
October	218,489	79,248	317,493	209,903	66.1	187,713	151,658	36,055
November*	179,932	86,092	282,216	172,830	61.2	200,855	158,674	42,181
December*	164,630	85,001	305,734	146,368	47.9	200,953	172,761	28,192
Total (Year 1931)	**2,544,301**	----	**3,598,254**	**2,391,368**	**66.5**	----	----	----
Total (Year 1930)	**2,692,498**	----	**3,789,427**	**2,572,445**	**67.9**	----	----	----

*Revised.
**Preliminary.
Source: U. S. Department of Commerce. Based on reports submitted to the Bureau of the Census by 94 establishments operating 127 plants.
†Capacity data shown varies according to the normal number of working days each month.

When *Quality* Counts

paper mills everywhere
are insisting on the

high
grade
bleached
sulphite
pulps

made by three modern
Pacific Coast mills.

RAINIER PULP & PAPER CO.
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GRAYS HARBOR PULP & PAPER CO.
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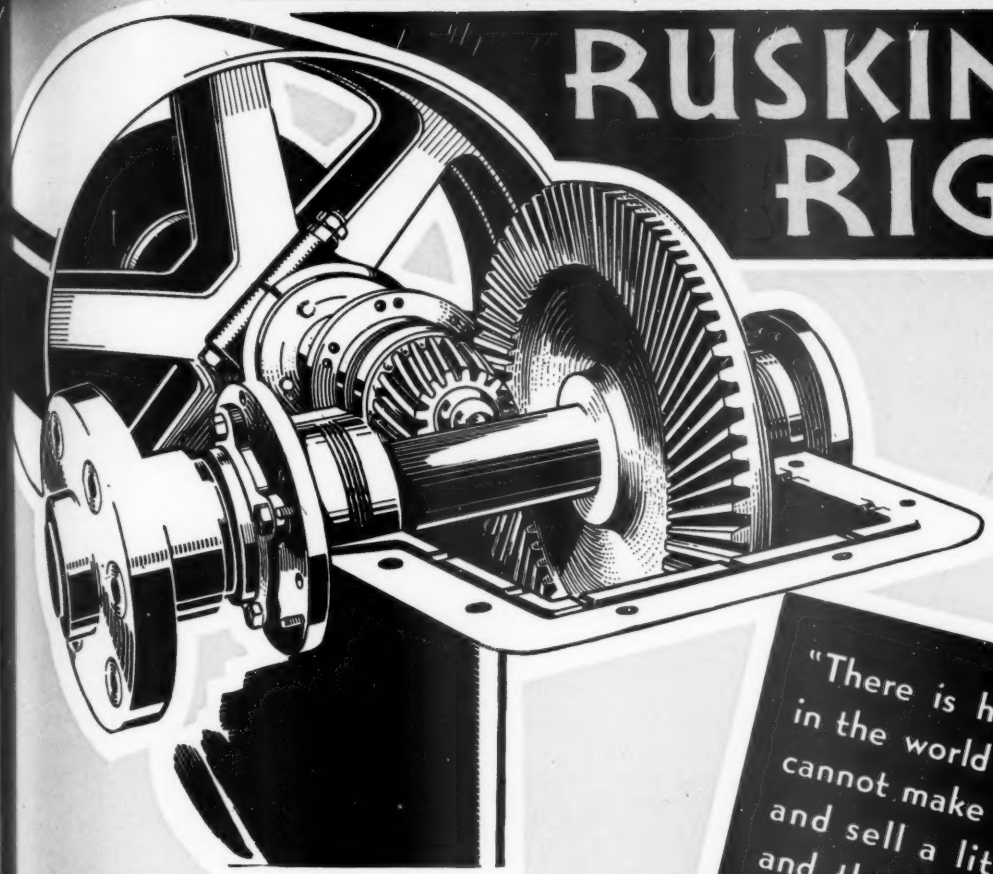
OLYMPIC FOREST PRODUCTS CO.
Port Angeles, Washington

Annual tonnage available
in excess of 125,000 tons.

RUSKIN WAS RIGHT!



"There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper, and the people who consider price alone are this man's lawful prey."

Here are the points on the Black-Clawson drive. Ponder them. Weigh them. Compare them with your present conditions.

BASE—Cast in one piece—heavy, rigid, vibration-free; all bearings for pulley and gears mounted directly thereon.

BEARINGS—Counter shafts and pulley Timken mounted in interest of perfect alignment, smooth running and power economy

LUBRICATION—Base casting used as oil reservoir. Gravity system employed. Special means for pouring oil directly into bearings adjacent to gear case. Positive fool-proof lubrication assured.

GEARS—Spiral or hypoid type. Made of nickel iron or steel. Noiseless and devoid of the usual vibration.

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In the long run you will be much farther ahead—in drive performance and in ultimate outlay.

THE BLACK-CLAWSON COMPANY
HAMILTON, OHIO

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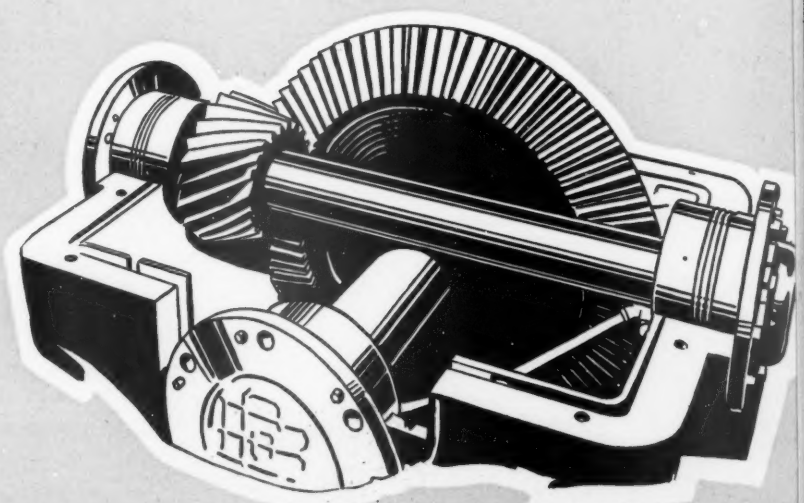
Middletown, Ohio

Export Office, 15 Park Row, New York City



LET'S GET TOGETHER!

You've got the jordaning to do—we've got the Jordans.

Here in Ohio—Miami No. 6 Jordan is refining the stock for a nationally advertised sulphite bond and saving power. Another in an all-rag mill is doing likewise.

Up in Wisconsin—No. 7 Miami holding the fort on another famous bond and using only 8.8 H.P. per ton.

In the South—kraft mills making their paper right in the Jordans, using No. 6's almost exclusively. One has 25 in use. Another ordered 20—all on one order.

Out on the Coast—No. 6's are in demand—also the No. 2's of which one mill has 12 on the job.

Down East—all kinds of mills, all kinds of papers, all sizes of Miami Jordans.

Up in Canada—mills in the newsprint and kraft fields use Miamis.

And so the story goes, Miamis everywhere.

Again—You've got the jordaning to do and we've got the Jordans. Large ones. Smaller ones. Steep taper and standard taper—whatever you require. Let's get together!

Shartle Bros. Machine Co., Middletown, Ohio
DIVISION OF
THE BLACK-CLAWSON CO., Hamilton, Ohio
Export Office, 15 Park Row, New York, N. Y.

MIAMI'S
No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
No. 7
Make Up The Line

SHARTLE BROTHERS

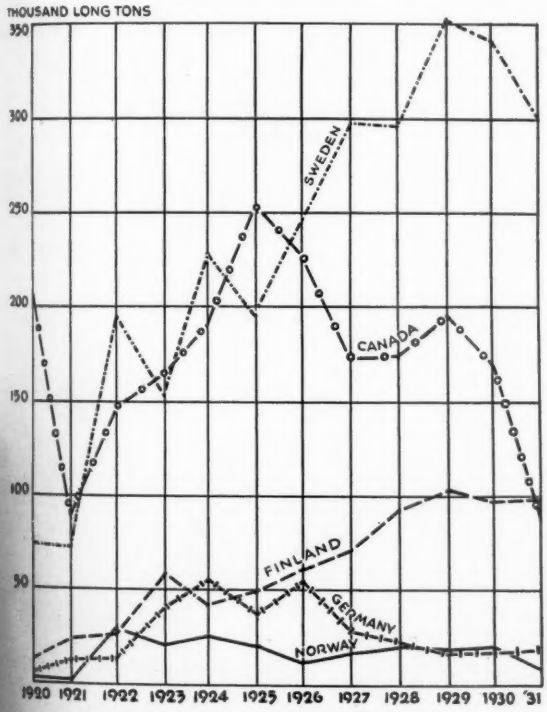
UNITED STATES IMPORTS OF BLEACHED SULPHITE FROM 1920 TO 1931

By Countries of Origin

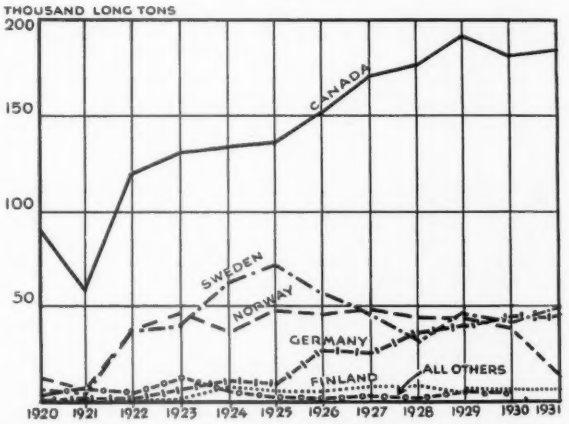
(Long Tons of 2,240 Pounds)

Countries—	Canada	Sweden	Germany	Norway	Finland	All Others	Total
1920	86,055	6,788	200	13,435	5,329	2,663	114,470
1921	59,198	5,770	1,335	8,180	7,591	2,931	85,005
1922	122,347	39,340	3,152	39,153	5,393	3,708	213,093
1923	132,138	41,958	12,655	46,849	12,063	4,917	250,580
1924	135,943	64,221	17,054	35,279	6,960	12,912	272,369
1925	137,598	71,577	16,662	48,111	4,130	8,898	286,976
1926	152,764	58,623	25,944	45,416	2,739	9,332	294,818
1927	171,280	46,369	25,341	49,928	4,595	13,617	311,138
1928	176,807	36,237	39,592	40,212	1,500	13,578	307,926
1929	187,469	47,199	45,471	39,312	7,306	7,478	334,235
1930*	181,195	43,916	46,101	36,758	7,335	7,358	322,693
1931	185,037	49,063	47,155	18,011	8,922	7,923	316,111

Source—Paper Division, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.
*Preliminary figures, subject to minor revision.



United States Imports of Unbleached Sulphite Pulp Showing Trend from 1920 to 1931 According to Countries of Origin.



United States Imports of Bleached Sulphite Pulp Showing Trend from 1920 to 1931 According to Countries of Origin.

Our Growing Volume of Sulphite Imports

A review of sulphite imports in the post war years shows a growing volume. In unbleached pulp Sweden's rapid rise to the dominating position is most significant. Finland's steady rise is apparent. Canada, on the other hand, has lost importance as a supplier of unbleached sulphite virtually in inverse ratio to Sweden's ascendency. On the other hand, Canada's increasing exports of bleached pulp to a large degree compensate this loss. It will be noted also that, while unbleached imports have fallen off since the 1929 peak, bleached pulp imports have been well maintained in volume.

UNITED STATES

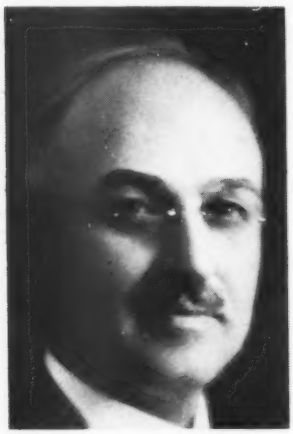
Imports of Unbleached Sulphite—1920 to 1931

(Long Tons—2,240 Pounds)

	Sweden	Canada	Finland	Germany	Norway	All Others	Total
1920	73,957	207,667	13,502	7,193	3,627	2,062	308,008
1921	73,070	88,112	24,696	14,308	3,137	4,770	208,093
1922	193,218	146,690	27,642	16,968	29,134	4,048	422,700
1923	159,065	167,725	58,602	42,851	21,222	12,388	461,853
1924	226,978	192,308	48,007	54,944	26,079	13,554	561,920
1925	193,034	253,670	48,996	42,362	20,639	20,083	579,284
1926	244,925	226,153	61,804	54,305	18,613	23,123	628,923
1927	299,875	179,630	70,106	25,487	17,747	21,011	613,856
1928	297,130	179,751	92,778	23,933	23,456	23,607	640,660
1929	350,152	190,565	109,121	16,822	18,325	16,471	701,456
1930	331,968	180,417	99,881	19,049	20,210	14,152	665,075
1931	300,682	88,604	97,467	22,212	10,195	16,850	536,010

Source: Department of Commerce, Bureau of Foreign and Domestic Commerce.

SOME PACIFIC COAST PULP AND PAPER INDUSTRY EXECUTIVES



F. R. TITCOMB
General Manager
Weyerhaeuser Timber Co.

OSSIAN ANDERSON
President
Puget Sound Pulp & Timber Co.

RALPH SHAFFER
President
Shaffer Box Co.

J. D. ZELLERBACH
President
Fibreboard Products Inc.

H. L. ZELLERBACH
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Zellerbach Paper Co.

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Rainier Pulp & Paper Co.

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Powell River Co., Ltd.

PAUL HERB
Vice-President
Pacific Coast Paper Mills

GEORGE W. HOUK
Executive Vice-President
Hawley Pulp & Paper Co.

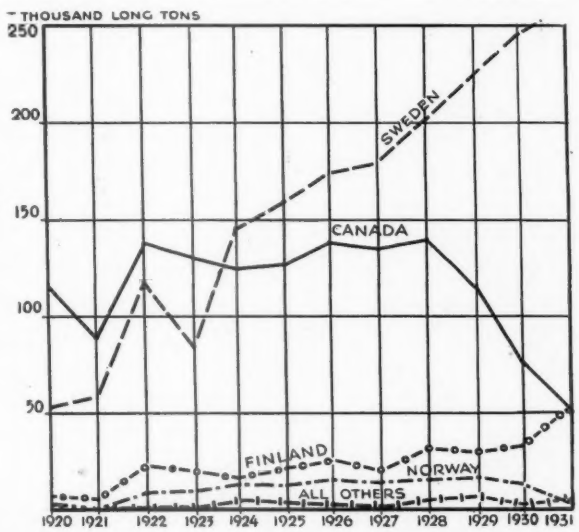
UNITED STATES
Paper and Woodpulp Production and Consumption
Consumption of Domestic and Imported Pulpwood and Total Pulpwood Requirements
Specified Years, 1899-1931

Year—	PAPER		WOODPULP		CONSUMPTION OF PULPWOOD			Total Pulpwood Requirements*
	Production (tons)	Consumption (tons)	Production (tons)	Consumption (tons)	Domestic (cords)	Imported (cords)	Total (cords)	
1899	2,167,593	2,158,000	1,179,525	1,216,254	1,617,093	369,217	1,986,310	1,949,712
1904	3,106,696	3,049,824	1,921,768	2,091,006	2,477,099	573,618	3,050,717	3,259,289
1909	4,216,708	4,224,000	2,495,523	2,856,593	3,207,653	793,954	4,001,607	4,419,749
1914	5,270,047	5,496,164	2,893,150	3,556,377	3,641,063	829,700	4,470,763	5,885,712
1917	5,919,647	6,255,725	3,509,939	4,148,600	4,706,327	773,748	5,480,075	6,782,700
1918	6,051,523	6,387,066	3,313,861	3,869,746	4,506,276	744,518	5,250,794	6,366,350
1919	6,190,361	6,479,490	3,517,952	4,113,911	4,445,817	1,032,015	5,477,832	6,806,491
1920	7,334,614	7,846,827	3,821,704	4,696,035	5,014,513	1,099,559	6,114,072	8,299,757
1921	5,356,317	6,053,915	2,875,601	3,544,218	3,740,406	816,773	4,557,179	6,649,388
1922	7,017,800	8,007,038	3,521,644	4,756,105	4,498,808	1,050,034	5,548,842	9,148,226
1923	8,029,482	9,339,573	3,788,672	5,149,695	4,636,789	1,236,081	5,872,870	9,924,161
1924	.....	.....	3,723,266	5,216,265	4,720,191	1,047,891	5,768,082	.....
1925	9,182,204	10,590,090	3,962,217	5,590,304	5,005,445	1,088,376	6,093,821	10,752,765
1926	.....	.....	4,394,766	6,096,279	5,489,517	1,276,490	6,766,007	12,129,041
1927	10,002,070	11,915,233	4,313,403	5,960,865	5,526,889	1,224,046	6,750,935	12,196,909
1928	10,403,338	12,447,841	4,510,800	6,239,641	5,750,689	1,409,411	7,160,100	12,939,145
1929	11,070,543	13,347,925	4,862,885	6,704,341	6,386,004	1,259,007	7,645,011	13,806,101
1930	10,079,656	12,227,335	4,610,408	6,404,124	6,059,306	1,096,282†	7,155,588†	13,050,813
1931‡	9,162,000	11,184,000	3,880,000	5,476,000	5,100,000	1,021,667§	6,000,000	11,900,000

Source: Bureau of the Census, Federal Trade Commission, and United States Forest Service.
Cords: 128 cubic feet.
*Pulpwood requirement is a computed figure which represents the pulpwood required to manufacture the total paper consumption of a year.
†Estimated on the basis of 1929 relationships.
‡Not strictly comparable with other data under same head. Refers to wood actually imported during the year, whereas other figures refer to imported wood actually consumed during year.
‡Estimated.

Growing Dependence Upon Foreign Sources of Pulpwood

The table above presents the basic information of the entire industry in terms of paper, pulp, and pulpwood. The column at the extreme right represents the computed total amount of pulpwood entering into the total consumption of all kinds of papers in the United States. The column reduces to terms of pulpwood content, regardless of whether the import is in the form of raw wood, pulp, or finished paper. It will be noted that while in 1899 the nation produced the great bulk of its pulpwood requirements from domestic forests, the discrepancy between domestic production of pulpwood and total pulpwood requirements has steadily grown until today only an estimated 46 cords of pulpwood out of every 100 cords required originates in domestic forests.



At the right—

The graph shows the trend of imports of sulphate (kraft) pulp into the United States according to countries of origin.

UNITED STATES
Imports of Bleached and Unbleached Sulphate—1920 to 1931
By Countries of Origin
(Long Tons of 2,240 Pounds)

Countries:	Sweden	Canada	Finland	Norway	All Others	Total
1920	25,012	114,175	7,762	3,363	1,236	178,548
1921	57,702	89,729	5,799	522	2,733	159,006
1922	122,545	137,307	23,631	8,850	2,611	294,944
1923	84,739	131,304	20,089	10,258	2,728	249,118
1924	144,148	125,256	17,749	13,080	5,474	305,707
1925	159,282	127,567	21,170	10,568	4,635	323,222
1926	169,810	140,625	25,006	11,798	3,711	350,950
1927	180,897	138,660	19,602	10,690	2,102	351,951
1928	201,757	141,779	32,139	15,761	4,410	395,846
1929	227,760	116,290	31,907	17,079	6,333	399,639
1930	247,361	76,334	35,427	13,072	3,677	338,714
1931	259,238	52,700	55,692	4,385	6,183	378,198

Source: Department of Commerce, Bureau of Foreign and Domestic Commerce.

bleached and unbleached

SULPHITE PULP

OF SUPERIOR QUALITY

SUPERIOR QUALITY pulp is essential to the production of superior quality paper.

To produce the same superior quality pulp day in and day out—with a uniformity that the buyer can depend upon with certainty—requires a combination of raw material, modern mill and personnel that few plants possess.

WEYERHAEUSER has the finest wood in abundance, a mill modern in design and construction, advanced technique involving definite production control at all stages, and progressive operators of ability and experience.

The result is SUPERIOR QUALITY SULPHITE PULP, widely known for its uniformity, cleanliness, high strength, and bright color.

WEYERHAEUSER FOREST PRODUCTS

Rail and Cargo Shipments

PULP DIVISION

WEYERHAEUSER TIMBER COMPANY

LONGVIEW WASHINGTON

The Paper Industry in the United States

Summary—1929 and 1927
Census of Manufactures—1929
(Revised)

	1929	1927	Per cent of increase or decrease (−)
Number of establishments	683	710	−3.8
Wage earners (aver. for year)[1]	102,334	98,566	3.8
Wages[2]	$138,981,656	$130,474,739	6.5
Cost of materials, fuel, and purchased electric current[2, 3]	$571,113,270	$572,785,538	(3)
Products, total value[3]	$961,414,544	$919,891,465	4.5
Paper and paper boards produced for sale	[4]$813,652,308	[4]$807,969,857	0.7
Other products	$147,762,236	$111,921,608	32.0
Value added by manufacture[5]	$390,301,274	$347,105,927	(3)

[1] Not including salaried employees.
[2] Manufacturers' profits can not be calculated from the census figures because no data are collected for certain expense items, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.
[3] The cost-of-materials item for 1927 is not strictly comparable with the corresponding item for 1929 because of the fact that the schedule for 1927 provided for the inclusion of data on the cost of mill supplies, whereas that for 1929 stated that such data should not be included. For this reason no per cent of decrease is presented.
[4] In addition, paper and paper boards to the value of $83,870,297 for 1929 and $64,236,990 for 1927 were produced and consumed in the same plants in the manufacture of the "Other products" (converted paper products).
[5] Value of products less cost of materials, fuel, and purchased electric current. The figure for 1927 is not strictly comparable with that for 1929 because of the change in the cost-of-materials item. (See footnote 3.)

Consumption of Chief Materials—1929
Census of Manufactures—1929

Class	Quantity (tons of 2,000 lbs.)	Cost
Wood pulp:		
Purchased	2,186,333	$129,527,566
[1]Produced for consumption in paper mills operated in conjunction with pulp mills	4,059,016	170,044,089
Rags	739,571	33,295,206
Paper stock	3,841,942	74,232,577
Manila stock (rope, jute bagging, etc.)	128,800	6,115,292
Straw	566,469	5,036,709
Rosin	38,390	2,155,204
Rosin sizing	98,423	6,402,617
Casein	18,451	4,346,664
Clay	468,191	7,072,556

Paper and Paper Board
Production, by Class and Quantity
1929, 1928 and 1927
Census of Manufactures—1929
(Revised)

(A census of the paper industry is now taken annually. For the odd-numbered years the same class of data are collected as for other manufacturing industries covered by the biennial census; but for the even-numbered years the only data collected are those relating to production and paper-making machines in use. The schedule used for 1928 did not call for data in as much detail as did those for 1929 and 1927, and consequently some of the figures in this table may not be strictly comparable as between 1928 and the other two years.)

Class	Quantity (tons, 2,000 pounds) 1929	1928	1927
Total	11,090,543	10,403,338	10,002,070
Newsprint, standard, rolls and sheets	1,409,169	1,415,450	1,516,929
Hanging paper	101,002	96,390	112,658
Catalogue	111,771	138,660	[1]183,338
Poster, novel, news-tablet, lining, etc.	150,649	[2]	[2]
Book paper, uncoated	1,497,912	1,334,326	1,269,321
Cover paper	28,072	27,043	26,333
Writing paper	587,383	550,472	508,808
Wrapping paper	1,605,783	1,467,271	1,525,305
Sulphite	215,777	351,786	290,724
Kraft	[3]846,468	873,578	637,295
Other	543,538	[4]241,907	597,286
Boards	4,451,187	4,061,803	3,773,608
Container board	2,255,537	1,984,697	2,100,150
Folding box board	991,285	947,613	796,216
Set-up box board	599,665	620,809	444,228
Building board	131,969	80,881	71,235
Binders' board	64,165	78,839	51,610
Cardboard	47,233	102,602	49,244
Leather board	24,228	18,911	24,195
Press board	11,901	7,775	6,938
Other	325,204	219,676	229,792
Tissue paper	370,468	348,174	316,070
Absorbent paper	78,694	74,768	63,766
Building paper	659,142	566,440	625,589
Other paper	39,311	[4]322,541	80,345

[1] Includes data for poster, novel, news-tablet, lining, etc.
[2] Not reported separately.
[3] Includes 134,234 tons sulphate, for bags.
[4] For 1928, some "Wrapping paper" other than sulphite and kraft was reported as "Other paper."

Paper and Paper Board
Production, by Class, Kind, Quantity and Value—1929
Census of Manufactures—1929
(Revised)

Class	Quantity (tons of 2,000 lbs.)	Value
Paper and paper board, aggregate	11,090,543	$897,522,605
Produced for sale	9,910,776	813,652,308
Produced for consumption in the manufacture of converted paper products in same plants	1,179,767	83,870,297
Paper and paper board, aggregate	11,090,543	897,522,605
Newsprint, standard, in rolls and sheets	1,409,169	80,706,899
Hanging paper	101,002	7,293,931
Catalogue	111,771	9,570,858
Poster, novel, news-tablet, lining, etc.	150,649	11,743,437
Book paper, total	1,497,912	168,271,655
Cover paper	28,072	6,429,856
Writing paper (fine), total	587,383	111,532,795
Of which, sulphite bond	264,402	40,033,437
Of which, other chemical wood-pulp writing paper	204,362	28,846,061
Wrapping paper, total	1,605,783	163,442,409
For bags, sulphite	47,002	4,308,885
For bags, sulphate	134,234	11,411,650
Unbleached sulphite wrapping	143,568	13,564,762
Bleached sulphite wrapping	25,207	3,101,407
Bogus and screenings	38,529	2,086,111
Greaseproof	7,965	1,607,962
Glassine	47,438	9,736,951
Heavy (mill wrappers, etc.)	63,238	3,423,428
Northern kraft	375,055	40,505,718
Southern kraft	282,218	23,146,229
Pacific Coast kraft	54,961	4,847,524
Rope, jute, etc.	62,270	12,075,511
Groundwood and chemical manila	54,893	4,600,729
Tag board, light manila board, and pattern	30,616	3,503,586
Other wrapping paper	238,589	25,521,956
Boards, total	4,451,187	227,760,522
Container board:		
Liners	1,108,852	55,212,515
Chip (plain and test)	785,199	27,865,152
Straw (for corrugated container use)	361,486	16,085,279
Folding box board (bending):		
Manila-lined (all lined boards)	590,523	30,869,321
Patent coated	182,831	11,213,066
Other folding box board (including shell and unlined boards)	217,931	11,085,633
Set-up box board (nonbending):		
Chip and straw	325,111	11,754,491
Newsboard	189,028	7,430,984
Other (including tube, egg-case filler, pasted news, and pasted chip boards)	85,526	3,859,432
Building board:		
Wall board	59,216	4,599,351
Insulating board	72,753	8,406,535
Binders' board	64,165	4,675,097
Cardboard	47,233	4,921,690
Leather board	24,228	2,942,498
Press board	11,901	2,480,486
Other board	325,204	24,358,992
Tissue paper, total	370,468	51,132,284
High grade	63,834	15,307,089
Manila and No. 2 white	40,691	5,543,375
Napkin	29,536	4,138,515
Toilet	142,725	15,102,952
Towel	52,283	4,903,065
Waxing	41,399	6,137,288
Absorbent paper, total	78,694	15,036,024
Building paper, total	659,142	39,375,990
Other paper	39,311	5,225,945

Paper Machines, by Type, Number and Capacity
By Kind of Paper Made—1929
Census of Manufactures—1929

(The statistics presented in this table are not strictly comparable with the corresponding figures in the reports for 1927 and 1928, because for those years each machine was classified according to the principal product made on it, whereas for 1929 the establishments were instructed to report as follows: "Where the same machine is used for producing more than one kind of paper, report the number opposite the item indicating the kind of paper normally produced, and divide the capacity according to the kinds of paper made on that machine.")

Class	Total capacity per year of 310 days (tons, 2,000 lbs.)	Fourdrinier No.	Fourdrinier Capacity per 24 hrs. (tons, 2,000 lbs.)	Cylinder No.	Cylinder Capacity per 24 hrs. (tons, 2,000 lbs.)
Total	13,578,620	937	21,937	839	21,865
Newsprint	1,695,080	126	5,461	1	7
Book paper	1,774,750	239	5,691	4	34
Cover paper	46,810	13	132	3	19
Writing paper	600,160	142	1,909	2	27
Wrapping paper	2,039,800	200	5,532	74	1,048
Boards	5,642,310	33	767	569	17,434
Tissue paper	450,430	108	998	93	455
Absorbent paper	129,580	35	319	12	99
Building paper	897,760	5	230	74	2,666
Other paper	301,940	36	898	7	76

How Chloramines Work in Slime Elimination

CHLORAMINES serve as a thorough, steady cleaner of both water and system, and are the best means yet developed to remove slime in pulp and paper mills and keep it from recurring.

The chloramines act very slowly, first attacking the soft surface slime, which is carried away in relatively small quantities and which can be handled easily by the felts and savealls without congestion. Then they penetrate the hard slime and scale underneath, eventually removing every vestige of the growth and accumulated dirt, and at the same time preventing the generation of more slime bacteria in the white water. The system is completely cleaned, the growth of any more organisms is prevented, and the entire operation goes on without any hazard to the paper itself. Chloramines act as a cleanser rather than as a purgative which might dump large quantities of slime onto the felts or into the savealls and endanger a whole run of paper.

The low oxidation potential of chloramines enables them to be effective for an unusually long time, and makes their application possible where chlorine alone would be immediately used up by oxidation. They have the further advantage of eliminating odors in cases where large dosage is necessary to take care of heavy bacterial loads, and where chlorine alone would leave disagreeable odors.

The Great Western engineers are prepared to give any cooperation desired for initial experiments and final installations for application of chloramines, and we shall be glad to answer inquiries with detailed information.

GREAT WESTERN ELECTRO-CHEMICAL CO.

9 Main Street, San Francisco, California
Plant: Pittsburg, California
Seattle Los Angeles

BRITISH COLUMBIA

Pulp and Paper Exports

Loaded at Ocean Falls, Powell River, Swanson Bay, Port Alice, Woodfibre and Vancouver

(Compiled by Vancouver Merchants' Exchange)

Destination—	1925	1926	1927	1928	1929	1930	1931
Australia	2,115	13,950	18,226	14,550	21,480	15,940	11,835
Argentine	.....	.....	.....	34,045	.....	609	..... *
Central and South America	11,000	.....	.....	1,667	14,677	16,503	22,637
Canada (Eastern ports)	.....	41,823	.....	.....	2,130	4,339	4,457
China	.....	.....	80	35	1,870	2,620	489
Japan	25,884	.....	53,244	57,230	45,526	54,865	78,631
New Zealand	11,890	10,560	8,702	20,548	9,525	9,214	5,363
United Kingdom	.....	.....	.....	.....	1,728	621	9,047
United States	175,233	158,917	152,002	172,017	156,788	174,017	157,943
Other Countries	.....	.....	1,980	1,119	277	90	458
Total Short Tons	208,122	235,506	243,671	301,211	254,001	278,818	290,860

*Argentine shipments in 1931 are included under Central and South America.

BRITISH COLUMBIA

Review of Pulp and Paper Production 1919-1931

	—PULP—			—PAPER—	
	Sulphite	Sulphate	Groundwd	News Print	Other
1931	124,521	11,744	170,432	217,562	17,709
1930	130,462	13,055	172,539	224,928	20,446
1929	112,925	15,647	151,066	201,009	19,492
1928	120,413	15,050	170,005	225,477	15,960
1927	119,005	13,700	163,548	214,010	13,745
1926	108,381	15,000	136,123	176,924	10,389
1925	92,514	16,856	121,363	148,201	9,261
1924	89,839	14,403	112,001	136,281	9,653
1923	99,878	9,932	107,266	142,928	7,709
1922	86,894	9,674	100,759	124,639	7,945
1921	68,502	6,519	89,725	110,176	6,934
1920	92,299	16,380	108,655	136,832	9,792
1919	80,347	9,473	99,769	123,607	7,202

	Total Production All Grades—Tons		Estimated value of production:
	Pulp	Paper	
1931	306,697	235,271	$13,508,000
1930	316,056	245,374	16,520,000
1929	279,638	220,501	14,400,000
1928	305,468	241,437	16,755,000
1927	296,253	227,755	18,505,000
1926	259,504	187,313	16,315,000
1925	230,733	157,462	14,466,000
1924	216,243	145,934	13,938,000
1923	217,076	150,637	15,018,000
1922	197,327	132,584	12,590,000
1921	164,746	117,110	13,500,000
1920	217,334	146,624	.....
1919	189,589	130,809	.....

Source—British Columbia, Department of Lands, Report of the Forest Branch.

CANADA

Value of Pulpwood Production

Year	Pulpwood Used	Pulpwood Exported	Total Production
1921	$ 38,283,262	$14,617,610	$ 52,900,872
1922	40,375,599	10,359,762	50,735,361
1923	43,594,592	13,525,004	57,119,596
1924	44,241,582	13,536,058	57,777,640
1925	48,012,602	14,168,935	62,181,537
1926	54,033,273	14,067,030	68,100,303
1927	54,582,190	15,702,705	70,284,895
1928	59,578,417	15,269,660	74,848,077
1929	63,101,138	13,314,738	76,415,876
1930	53,917,995	13,611,617	67,529,612
Ten-Year Total	$499,719,650	$138,173,119	$637,893,719

Source: Canadian Department of Trade and Commerce, Dominion Bureau of Statistics, Forest Products Branch.

BRITISH COLUMBIA

Principal Statistics of the Pulp and Paper Industry 1929-1930

		1929	1930
Capital invested	$	47,590,726	53,405,998
Total number of employes	No.	3,077	2,959
Salaries and wages	$	5,068,733	4,945,001
Fuel and electricity used	$	995,686	974,298
Power employed	H.P.	99,880	104,442
Pulp-making materials	$	3,822,455	3,992,214
Pulp manufactured	$	7,790,494	7,939,798
Paper-making materials	$	4,752,558	5,364,886
Paper manufactured	$	13,226,274	14,134,251
Gross value of Production	$	16,896,652	17,785,550
Net value of production	$	12,512,804	13,203,254

Source: Canadian Department of Trade and Commerce, Dominion Bureau of Statistics, Forest Products Branch.

BRITISH COLUMBIA

Wood Used in the Manufacture of Pulp By Kinds and Processes—1930

Kind of Wood:	Quantity Cords	Value Dollars	Quantity of Wood Used in Each Process: Mechanical Cords	Sulphite Cords	Sulphate or Kraft Cords
Spruce & Balsam	155,058	1,508,754	114,720	39,730	608
Hemlock	202,355	1,578,468	28,143	169,865	4,347
Poplar	71	375	71	.....	.....
All Others*	15,913	154,687	.....	1,511	14,402
Total†	373,397	3,242,284	142,934	211,106	19,357

*Includes Douglas fir, cedar, white pine, tamarack, culls and chips.

†In addition, 19,122 cords of pulpwood, valued at $104,874, were exported, making the apparent total pulpwood production in British Columbia equivalent to 392,519 cords, valued at $3,347,158.

Source: Canadian Department of Trade and Commerce, Dominion Bureau of Statistics, Forest Products Branch.

BRITISH COLUMBIA

Principal Production Statistics 1930

	Quantity	Value
Pulpwood produced, cords	392,519	$3,347,158
Pulpwood consumed, cords	373,397	3,242,284
Wood pulp produced, tons	335,429	7,939,798
Wood pulp consumed, tons	268,542	5,075,439
Paper produced, tons	252,730	14,134,251

Brubaker Aerial Surveys Photo, Portland.

The Camas, Washington, mill of the Crown Willamette Paper Company is one of the world's largest completely self-contained specialty mills.

CANADA •

Pulp and paper manufacturing is the Dominion's big industry.

THE pulp and paper industry is the most important manufacturing industry in Canada. It headed the the lists in 1930 for gross and net values of manufactured products as well as for distribution of wages and salaries. In total capital invested the industry is second only to electric light and power plants and in total number of employees it is second only to sawmills.

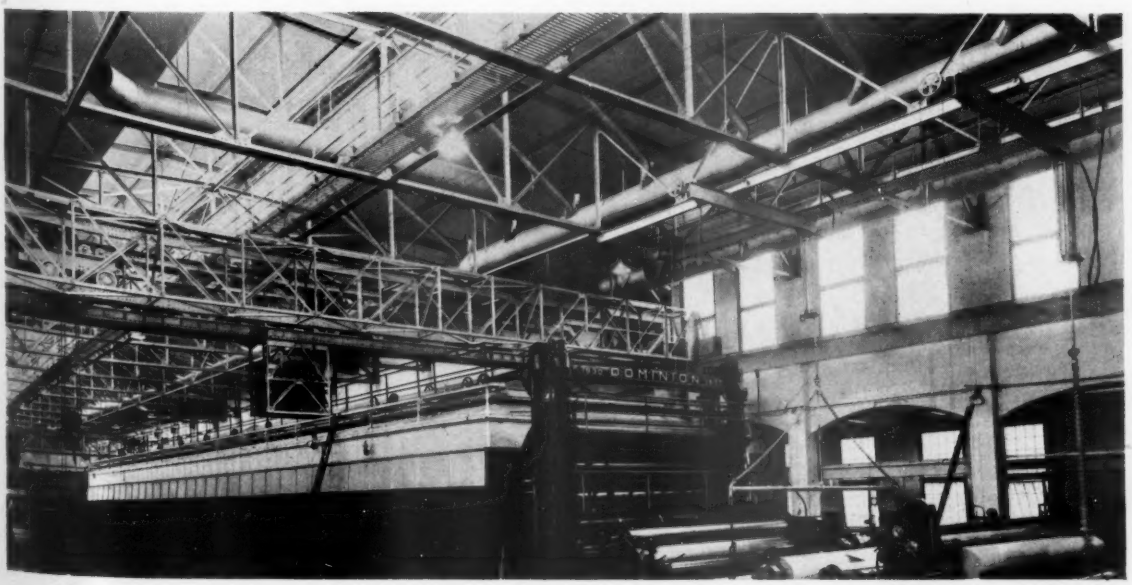
The industry has headed the lists in wage and salary distribution since 1922 when it replaced the sawmills in this respect and it has been first in gross value of products since 1925, exceeding the gross value of flour mill production. In these comparisons, only the manufacturing stages of the pulp and paper industry are referred to, no allowance being made for the capital invested, the men employed, the wages paid nor the products of the operations in the woods which form such an important part of the industry as a whole. Operations in the woods are dealt with in reports on primary forest production owing to the difficulty of separating the production of pulpwood from the production of saw-logs and other primary forest products.

Considering only the manufacturing aspect of the industry, the gross value of production in 1930 was $215,674,246. This gross value represents the sum of the values of pulp made for sale in Canada, pulp made for export and paper manufactured. It does not include pulpwood nor the pulp made in combined pulp and paper mills for their own use in making paper.

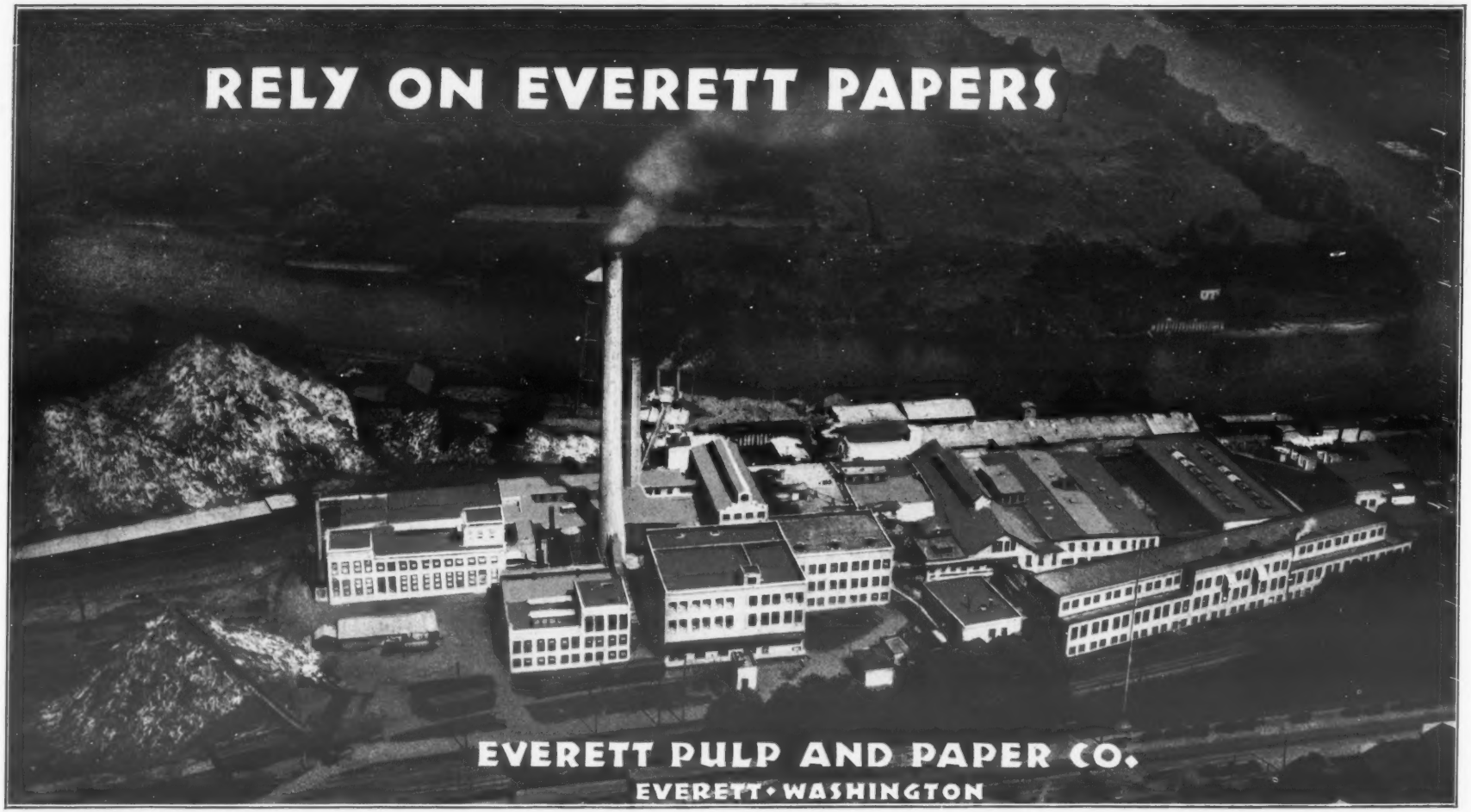
In net value of production the pulp and paper industry has headed the lists since 1920 when it replaced the sawmills. The net value of production in 1930 was $133,681,991, a decline of approximately $14,400,000 from the high of 1929.

If operations in the woods are taken into consideration, the total value to Canada of the industry as a whole may be considered as the sum of the values of pulpwood and pulp exported and the gross value of paper products. This total in 1930 amounted to $226,297,979. In 1930 the 81 mills manufacturing pulp produced 3,619,345 tons valued at $112,355,872 as com-

Note: This review is condensed from a report, "The Pulp and Paper Industry in 1930", issued by the Department of Trade and Commerce, Dominion Bureau of Statistics, Forest Products Branch, Canada.



The 226-inch No. 7 machine of the Powell River Company which began production at the beginning of 1931



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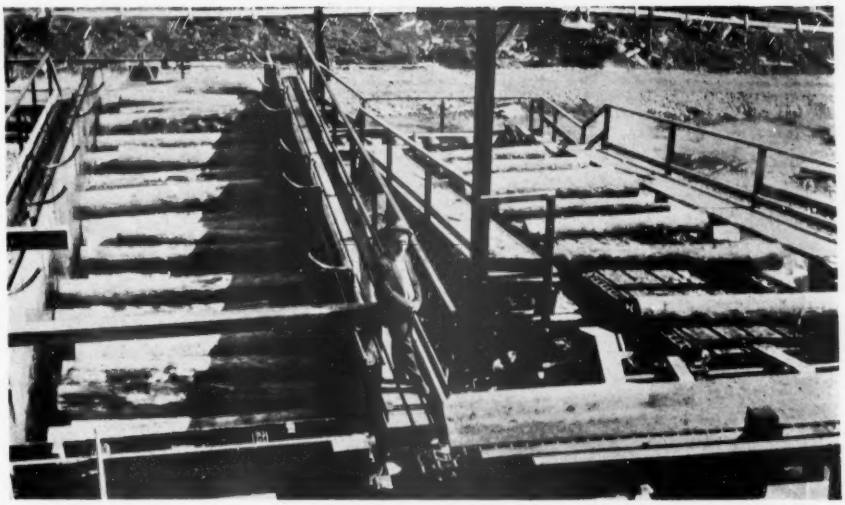


Here are two views of the Thorne type log barker at the Port Alice mill of the B. C. Pulp & Paper Company, the first of its kind to be used on the big logs characteristic of the Pacific Coast.

pared to 4,021,229 tons in 1929 valued at $129,033,154 representing a decrease of 10% in quantity and 12.9% in value. Of the total for 1930 the combined pulp and paper mills produced 2,741,310 tons valued at $70,308,009 for their own use in paper making. A total of 108,028 tons valued at $4,991,471 were made for sale in Canada and 770,007 tons valued at $37,056,392 were made for export.

The 77 mills making paper in 1930 produced 2,926,787 tons of paper valued at $173,626,383 as compared to 3,197,149 tons in 1929 valued at $193,193,022, a decrease of 8.5% in quantity and 10.1% in value.

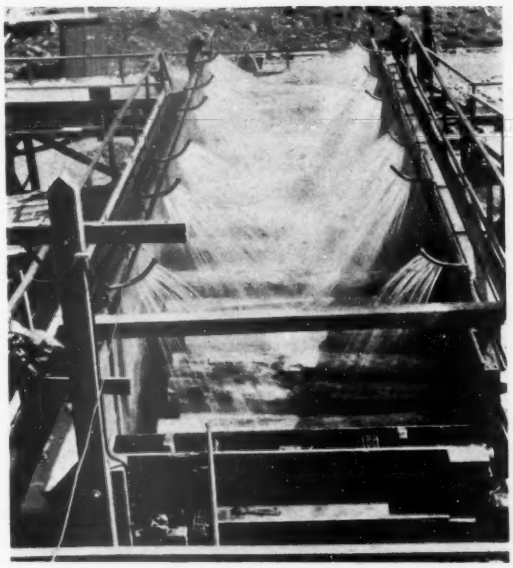
Newsprint paper made up 85.3% of the total reported tonnage of paper manufactured in 1930. The newsprint amounted to 2,497,952 tons valued at $136,181,883, as compared to 2,725,331 tons in 1929 valued at $150,800,157, a decrease from 1929 of 8.3% in tonnage and 9.7% in total value. The Canadian production of standard newsprint was 95% greater than that of the United States during 1930.

The total capital invested in the manufacturing part of the industry in 1930 was $714,437,104 as compared to $644,773,806 for 1929, an increase of 11.3%. Only capital invested in operating mills is included in these totals.

The total number of employees on salaries and wages in pulp and paper mills in 1930 was 33,207 and the total payroll was $45,774,976.

The apparent total production of pulpwood in 1930 was 5,977,183 cords valued at $67,529,612 as compared to 6,536,335 cords in 1929 valued at $76,120,063. Of the total production in 1930 about 77.7% or 4,645,717 cords valued at $53,917,995 were manufactured into pulp in Canadian pulp mills, while the remaining 22.3% or 1,330,466 cords valued at $13,611,617 were exported to the United States. These figures show an increase from 19.8% in 1929 to 22.3% in 1930 in the proportion of pulpwood exported, and the actual quantity of pulpwood exported unmanufactured also shows an increase. The quantity of pulpwood used in Canadian mills has increased by 11% during this period. There was a small importation of pulpwood into Canada.

The exports of wood-pulp from Canada during the calendar year 1930 amounted to 760,220 tons valued at $39,059,979 as compared to 830,848 tons in 1929



valued at $43,367,984. During 1930 the imports of wood-pulp were 18,526 tons valued at $826,862.

The exports of paper and paper goods during the calendar year 1930 were valued at $138,440,242 as compared to $154,919,122 in 1929. These exports were made up chiefly of newsprint paper of which 2,331,010 tons valued at $133,280,932 were exported chiefly to the United States. Canada's exports of newsprint are now second only to her exports of wheat and are greater than the newsprint exports of the rest of the world.

The gross contribution toward a favorable trade balance resulting from the activities of the pulp and paper industry as a whole in 1930 amounted to approximately $176,506,583, being made up of the difference between the value of pulpwood exported and pulpwood imported amounting to $12,740,882, the difference between the value of pulp exported and pulp imported amounting to $38,233,117, and the difference in value between paper exports and imports amounting to $125,532,584. The total for 1929 was $195,542,429.

Cutting Western Hemlock and Sitka Spruce into cordwood for Pacific Coast pulp mills. The scene was photographed in Western Washington where the stand was approximately 200 cords to the acre.

Pulpwood on the Pacific Coast

A principal reason for the rapid development of the wood pulp industry in the Pacific Northwest is the abundance of suitable timber. The region is blessed with a climate highly suitable for the growing of trees. The rain-laden winds that sweep in steadily from the Pacific Ocean provide a cool, moist climate that is favorable to growth. Snow is abundant on the higher slopes during the winter but on the Coastal plain reaching from the foothills of the Cascade range to the sea snow is the exception rather than the rule.

In the Western states there are several distinct forested areas, each with its own timber types. However, the pulp-paper development in the West has thus far been confined almost entirely to the moist Coastal region, otherwise popularly known as the Douglas Fir region, which stretches from approximately the Oregon-California line northward through Oregon, Washington, British Columbia, and into Southeastern Alaska.

Altho Douglas Fir has long been considered the prime species in this area, due to its prominent position in the lumber world, Western Hemlock has come prominently to the fore in recent years as its value as a pulpwood has come to be appreciated generally. Douglas Fir, Western Hemlock, and Sitka Spruce are found intermixed throughout the region, altho the stand of the latter is mostly confined to districts close to the Coast.

Throughout the region the stands are dense, the trees are generally large, the ground is heavily cloaked with underbrush, and the trees are quite uniform in size because the forests are either mature or, in reforested areas, have had an even start due to the clean-cutting system of logging used. The pulpwood ranges from 50 to 200 cords per acre.

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Sweden's Pulp Exports Hold Up Well

Despite severe shrinkage in consumption brought about by the world-wide depression, Sweden in 1931 maintained her pulp exports on a volume basis almost identical with that of 1930. The United States, which consumes approximately one third of the total Swedish export, in 1931 took more Swedish pulp than in the preceding year, whereas most of the other major Swedish markets absorbed a diminished tonnage.

Suspension of the gold standard by the Bank of England on September 21 was considered the outstanding event of the year because of its reaction in upsetting established channels of trade and in injecting serious elements of uncertainty into the market. England subsequently boosted its tariffs and effectively cut off the principal market for Swedish paper. France imposed a currency equilization tax in November.

Sweden was free from labor troubles during the year, but production was curtailed 30% on a voluntary basis by the sulphite producers of Northern Europe. Kraft production was curtailed without the formality of agreement, due to unsatisfactory price levels. Kraft pulp went almost to the bottom in 1930 at $1.50 per 100 lbs., and adhered closely to that point throughout 1931. Prices on sulphite declined drastically.

Ability to maintain a high export tonnage in spite of curtailed production on pulp is attributed to the accumulation of stocks at the beginning of the year.

Exports of finished paper showed a substantial tonnage increase. Newsprint exports to the United States amounted to 62,000 metric tons.

SWEDEN

Wood Pulp Exports—All Grades—1931-1930-1913

Principal nations exported to, in order of 1931 rank.

(Metric Tons—2205 Lbs.)

1931 Rank	Countries—	1931	1930	1913
1	United States	673,051	649,692	99,600
2	Great Britain	462,897	498,686	405,473
3	France	187,357	221,577	214,178
4	Norway	80,334	98,598	36,989
5	Spain	62,691	55,930	27,451
6	Italy	60,634	56,822	8,516
7	Belgium	54,685	57,142	36,704
8	Germany	46,839	43,801	76,095
9	Holland	42,751	47,238	14,532
10	Denmark	37,529	36,342	38,586
11	Australia	25,358	19,034	683
12	Soviet Russia	14,192	997	84
13	Cuba	9,692	9,037	----
14	Japan	7,376	6,296	18,101
15	Brazil	7,332	13,067	2,853
16	Switzerland	7,290	4,193	740
17	Mexico	6,371	10,156	3,008
18	Argentine	5,474	2,543	14,958
	All others	34,759	43,587	8,962
	Total Exports	**1,826,585**	**1,874,739**	**1,007,243**

Source—The Swedish Wood Pulp Journal.

SWEDEN

Exports of Paper—Principal Markets—Major Grades—1931

Metric Tons—2205 Lbs.

Countries		Newsprint	Wrapping: Sulphate	Wrapping: Sulphite	Wrapping: Greaseproof	Cardboard
United States		62,072	2,265	381	4	589
Great Britain		18,467	62,820	50,195	16,590	18,550
France		18,273	4,154	1,259	36	79
Japan		15,836	7,310	4,958	720	----
China		3,911	2,342	6,477	66	720
Total*	1931	183,189	114,864	87,922	23,920	29,069
	1930	175,156	96,852	86,317	10,030	----

*Includes all other countries not shown in this table.
Source—The Swedish Wood Pulp Journal.

SWEDEN

Exports of Wood Pulp, by Grades—1931-1930-1913

(Metric Tons—2205 Lbs.)

	Mechanical: Wet	Mechanical: Dry	Chemical: Sulphite: Bleached	Chemical: Sulphite: Unbleached	Chemical: Sulphate: Bleached	Chemical: Sulphate: Unbleached	Total All Grades
1931	455,128	39,621	150,821	654,812	84	526,119	1,826,585
1930	424,613	53,233	138,166	792,647	250	465,819	1,874,728
1913	264,149	58,913	32,643	554,578	13,402	83,538	1,007,243

Source—The Swedish Wood Pulp Journal.

SWEDEN

WOOD PULP PRODUCTION—1920 to 1931

(Metric Tons of 2,205 Pounds)

Year	Total Chemical Pulp	Sulphite Pulp (Bleached and Unbleached)	Sulphate Pulp	Mechanical Pulp	GRAND TOTAL
1920	974,000	769,000	205,000	----	974,000
1921	584,000	467,000	117,000	----	584,000
1922	998,000	757,000	241,000	----	998,000
1923	989,000	756,000	235,000	----	989,000
1924	1,240,000	930,000	310,000	377,000	1,617,000
1925	1,285,000	945,000	340,000	391,000	1,676,000
1926	1,450,000	1,040,000	410,100	446,000	1,896,000
1927	1,558,000	1,098,000	460,000	528,000	2,086,000
1928	1,350,000	919,000	431,000	535,000	1,885,000
1929	1,875,000	1,215,000	660,000	611,000	2,485,000
1930	1,842,000	1,210,000	632,000	578,000	2,420,000
1931	1,727,000	1,019,000	608,000	570,000	2,297,000

Source—Swedish Wood Pulp Journal and U. S. Tariff Commission.

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FINLAND'S PULP INDUSTRY

Note: The data and statistics presented are condensed from a review presented in The FINNISH PAPER AND TIMBER JOURNAL

DURING the second half of 1930 the cellulose manufacturers realized that the following year would be one of almost unparalleled difficulties for their trade; and in order to alleviate as much as possible the threatening crisis the trade resorted to a series of concerted measures.

The first steps in this direction were taken already in the autumn of 1930 with the result that in December of that year all the sulphite cellulose manufacturers in Austria, Czechosolvakia, Finland, Germany, Memel, Norway and Sweden agreed to curtail their output. The agreement was to be valid from October 1st, 1930 to December 31st, 1932.

The last year was in every respect very difficult for the cellulose industry. Business was largely handicapped by the international trade depression. The protectionist policy which is gaining ground all over the world has adversely affected also cellulose, nothwithstanding the fact that it is eminently a raw material. Thus France, for example, has raised the import duties on cellulose and, moreover, imposed a considerable import tax on shipments from countries with a depreciated currency. Similar tendencies are reported from many other quarters.

Prices were throughout the year exceedingly disappointing. So far from being able to raise quotations from the low level ruling at the beginning of the year, manufacturers were on the contrary forced to allow further concessions. It is true that the manufacturers derived a certain compensation from the new exchange rates, which were a result of the abandonment of the gold standard by the Bank of Finland, but this advantage was set off by the fact that the mills had to put up with higher productive costs in consequence of their output curtailment.

Despite the curtailment scheme in force, Finland's total production shows slightly larger figures for last year than for 1930, for which increase the completion of newly-erected plants is responsible. The subjoined table gives interesting figures regarding recent developments.

According to official Customs returns Finland's cellulose shipments in 1931 amounted to about 629,000 tons. The difference between this figure and that referred to above is about 4 per cent, probably due to slight differences in the method of recalculating wet pulp in terms of dry weight.

In view of present adverse market conditions it is gratifying to state that the Finnish mills have been able to hold their own in the international competition. At the beginning of last year the mills adhering to the Finnish Cellulose Union had unsold stocks amounting to about 83,000 tons of sulphite and about 48,000 tons of sulphate, or together about 131,000 tons. At the end of 1931, stocks had been reduced to a total of merely 90,000 tons. Two new sulphite cellulose mills started production last year: O. Y. Toppila near Uleaborg and O. Y. Waldhof A. B. in Kexholm.

In 1931, Finland carried out the decided curtailment of 30%. Some of the other interested countries have not yet effected the corresponding reduction and are, consequently, obliged to make up for their arrears in the course of 1932 and, moreover, effect the general reduction of 15% decided to take place this year. Finland will thus be able to reckon with a larger production during the current year.

Distribution of the Finnish Cellulose Union's Shipments to Various Countries (in dryweight metric tons):

	1931		1930	
	Sulphite	Sulphate	Sulphite	Sulphate
England	159,942	44,518	133,369	26,039
U. S. A.	105,776	63,769	101,821	30,669
France	27,522	9,974	25,211	1,947
Belgium	20,624	6,749	16,149	3,731
Germany	4,199	19,948	1,763	18,241
South America	15,124	4,513	16,840	3,619
Japan	4,018	7,399	2,293	962
Denmark	7,730	2,190	7,017	656
Italy	8,045	613	8,799	1,160
Russia	.....	7,860	27,798	5,278
Holland	6,188	1,330	2,842	1,206
India	4,824	35	3,274	.....
Spain	3,071	293	4,424	.....
Estonia	1,565	21	1,198	.....
Greece	997	.....	154	.....
Latvia	845	57	.....	37
Switzerland	492	308	79	233
Sweden	454	254	.....	51
Poland	162	147	16	.....
Portugal	246	.....	499	.....
China	51	.....	.....	.....
Egypt	11	.....	.....	.....
Norway	.....	.....	.....	1,027
Yugoslavia	.....	.....	.....	52
Bulgaria	.....	.....	.....	31
Czechoslovakia	.....	.....	.....	16
	371,886	169,978	353,546	94,955
	541,864		448,501	

The Cellulose Production in 1931
(In metric tons, dry weight)

	1931	1930
Output of members of the Finnish Cellulose Union:		
Sulphite Cellulose	488,078	518,670
Sulphate Cellulose	173,874	165,705
	661,952	684,375
Diesen Wood Company A. B.:		
Sulphate Cellulose	18,150	25,014
O. Y. Waldhof A. B.:		
Sulphite Cellulose	33,649	.....
Finland's total production	713,751	709,389

Finland's Exports of Cellulose in 1931
(In metric tons, dry weight)

	1931	1030
Members of the Finnish Cellulose Union:		
Sulphite Cellulose	371,886	353,546
Sulphate Cellulose	169,978	94,955
	541,864	448,501
Diesen Wood Company A. B.:		
Sulphate Cellulose	26,803	16,102
O. Y. Waldhof A. B.:		
Sulphite Cellulose	32,250	
Kymmene A. B.:s exports to its own paper mills in England:		
Sulphite Cellulose	3,581	
Finland's total exports	604,498	464,603

LOS ANGELES, CALIFORNIA

Here in the heart of the Southern California industrial center Fibreboard Products Inc. operates a modern board mill and container plant.

THE PAPER INDUSTRY OF NEWFOUNDLAND

NEWFOUNDLAND was the only country in North America to produce more newsprint in 1930 than was the case in 1929. In 1930 the two mills in the Dominion produced 287,259 tons. This was a little over 32,000 tons more than in the previous year and the best in the history of the industry.

	Tons
1923	64,906
1924	64,648
1925	96,588
1926	186,471
1927	202,852
1928	230,745
1929	255,500
1930	287,259
1931	294,983

The newsprint industry is rapidly overtaking in value the fishing industry, and can now be regarded as the second most important business of the island. The industry is controlled by two companies, namely, the Anglo-Newfoundland Development Company, Ltd., at Grand Falls, whose products are shipped mainly to the United Kingdom, and the International Power and Paper Company of Newfoundland, Ltd., at Corner Brook, whose shipments are practically all made to the United States. The former company is controlled by British and the latter by American capital.

The mills at Grand Falls commenced production in 1909, and now have a possible daily output of over 420 tons. The plant at Corner Brook commenced operations in 1925 and can produce over 620 tons per day. On January 26, 1931, it touched a new high record, when production of newsprint of 628.51 tons was achieved.

The Anglo-Newfoundland Development Company and its subsidiaries control 6,367 square miles (including, of course, lakes, rivers, etc.) of timber areas. It has developed its own hydro-electric power plant, the total power of the plant being 23,500 h.p. The plant has been kept constantly up to date, and the capacity of the mill has been raised from an original of 120 tons of paper a day to over 400 tons. New machines have been installed and old ones reconditioned.

The International Power and Paper Company, Ltd., of Corner Brook, has been operating with steadily increasing efficiency. The four paper machines, which prior to acquisition by the International Paper Company had never averaged over 400 tons a day, had an average daily production during 1929 of 483 tons. The year 1930 has seen still further improvements, the daily average for the year being much higher. It is expected that the output from the Corner Brook mill for 1931 will be 10 to 15,000 tons more than 1930.

In 1930 the 58,000 h.p. extension to the hydro-electric plant at Deer Lake which serves Corner Brook, was put in operation, bringing the total installed capacity up to 156,000 h.p.

After deducting the amounts set aside for depreciation and depletion, the balance for 1930 amounted to $2,336,042, more than nine and a half times the amount required for interest on the company's first mortgage bonds, and approximately one and a half times the total interest requirements on the entire fixed and current indebtedness of the company. The balance added to surplus in 1930, after all deductions, was $764,641.

Economic Conditions in New Foundland—Department of Overseas Trade.

The Japanese Paper Industry in 1931

Since most of the expansion works were completed in 1930, there was not a single installation of a paper machine during 1931 as far as the members of the Japan Paper Mills Association were concerned. On the other hand, the Odomari Sulphite Mill of Oji Paper Co. in Karafuto was closed in October last year as a result of curtailment programs now being effected. This mill has had a splendid record, having been opened in November, 1914, in producing sulphite pulp for the past 17 years and especially in supplying the same during the World War when the importation of pulp was suddenly stopped.

It is noticeable that the production of rayon pulp was finally started by Karafuto Industrial Co. during the latter part of the year.

A few new machines were installed by non-members of the Association during the past year. A cylinder machine 4 feet wide was added to a mill of Special Paper Co. Also, a Yankee machine of 120 inches was installed at a new pulp experimental mill in Nagoya where Dr. Marusawa's ammonia process will be employed.

The curtailment which is being applied to printing paper, including writing, imitation and drawing, but excepting news print, was finally brought up to 45% in September last year and further increased to 55% by December.

A traders union was organized in March last year among the makers of machine-made Japanese paper with the purpose of preventing unfair competition. The law for the control of important industries which passed the Diet last year and made effective this year, will also be applied to the manufacturers of printing paper in general and board paper of over 5 ounces per square foot.

Complete paper statistics for the year 1931 are not available but the decrease in both production and sales may be observed to an extent of 2.4% and 1.3% respectively compared with the previous year. Moreover, the imports have increased, and also the exports increased until August, in comparison with those of the previous year, but the latter suddenly dropped after September.

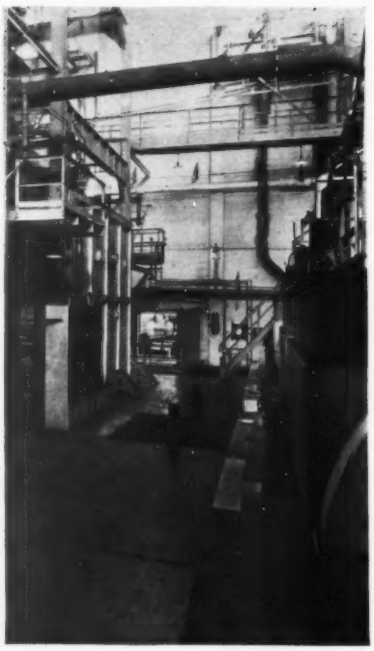
JAPAN

Paper Production—1930-1931

The Japanese Paper Manufacturers' Association reports an output of 665,292 short tons of paper (including paperboard but exclusive of strawboards) during the calendar year 1931 as against 683,767 short tons during the corresponding period in 1930, while sales during the same time showed a corresponding decrease from 673,594 tons to 664,793 tons. Production by leading grades for the two years mentioned was as follows:

Class—	Short tons	Short tons
Newsprint	284,180	257,797
Other coarse printing papers	61,011	61,897
Fine printing paper	83,032	75,370
Writing and drawing paper	12,702	19,090
Imitation torinoko	60,576	61,705
Wrapping paper	62,960	68,487
Boards (exclusive of strawboard)	37,189	38,196

(Trade Commissioner Paul P. Steintorff, Tokyo)



The tendency in steam and power plant practice in Pacific Coast mills has been toward higher pressure in the boilers and bleeder type turbines which act as reducing valves and divert the lower pressure steam to mill processes, thus generally increasing mill efficiency. Shown is the control alley in the new boiler plant of the Crown Willamette Paper Company's mill at Camas, Washington. Both hogged fuel and oil are fired.

Japanese Imports of Pulp — 1931

Country—	Quantity (lb.)	Value (yen)
Canada	110,562,400	5,200,455
United States	45,312,667	2,418,966
Norway	23,204,933	2,013,978
Sweden	30,684,267	1,220,410
Germany	4,152,133	245,039
France	1,119,732	99,479
Other Europe	12,132,135	641,999
Total, 1931	227,168,267	11,840,326
Total, 1930	178,568,666	12,084,388

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PAPER MANUFACTURING HISTORY

Continued from page 45

no doubt, the facts were that the early day boys were simply out after a bit of profit, even as you and I.

Distributing paper was then a simple business. There weren't many people. Local production was painfuly simple and moved pretty much directly from mill to consumer. But, as the population and wants grew, and the citizenry quit hazing grizzly bears and tying knots in the tails of mountain lions and gradually dropped the custom of wearing hardware in holsters, demands for paper grew. Then the paper distributor began to find a place. He took over the sales of local mills and stocked in addition a lot of paper items made by Eastern mills. He performed a definite service. In this year 1932 the paper merchandiser—speaking of the group in terms of the individual—provides many convenient distributing depots throughout the Western states, greatly simplifying for the consumer the process of getting a bit of paper from the mills. In fact, the paper jobber's function increases in importance as the items in the paper catalog multiply.

For the purpose of bringing down to date this picture that I have been trying to draw of the widening production schedule of the Pacific Coast paper mills I am going to set forth my viewpoint for say the period back to 1920. Perhaps the most distinct progress has been made since that time, in the variety and scope of papers made locally. It is in the past decade that the tide of Westbound paper shipments has not only slacked, but has actually started to ebb.

Despite the depression now upon us the growing volume of Coast paper production has made a distinct impression upon Westbound paper shipments. **Per contra,** the Eastbound shipments of paper and allied lines are steadily on the rise. Westbound, the grades largely supplied by the mills on the Atlantic seaboard, the Kalamazoo, Fox River, and Miami Valley districts are being encroached upon by the really splendid papers made locally.

Let us enumerate briefly a few distinct lines apparently monopolized a few years ago by our Eastern friends. The list covers paper and converted items now made locally, and, altho not complete by any means, makes nevertheless an impressive showing. Here they are: adding machine and cash register rolls; bristol board; box boards and binder boards; bonds; mimeograph; ledgers; writings and envelope papers; book papers of several grades, including coated; carbon papers; cover; drawing and detail; envelopes, greeting cards; gummed tape; newsprint; poster; shipping and factory tags; all varieties of bags; bottle caps; boxes, pails, paper bottles and drug cans; bread, butter and candy wraps; building papers and roofings; confetti and serpentine; car liners; chop holders, tooth pick frills, doilies; crate liners; corrugated rolls; drinking cups; fruit packers supplies—wraps, pads, shims and collars; glassine and greaseproof; mailing tubes; napkins; paper towels; soda straw paper and soda straws; shipping cartons and cases; tire wraps; tissue paper; toilet paper, flat, folded, oval and rolls; toilet seat covers; waxed paper; and a wide variety of wrapping papers.

Even the twine industry shows activity. Paper twine made in the Northwest is growing in popularity and volume.

Just a word about the tremendous growth of the

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pulp industry. Many of the best Eastern mills are now converting Pacific Coast pulp into fine finished papers. More Western pulp will be called upon as the years roll on, and when Washington, Oregon and Idaho need help, the trees of Alaska will do their share in the building, eventually, of the leading pulp industry of the country in the Pacific Northwest.

And that latest bidder for popularity in the field of wrapping materials, cellophane, finds at least a part of its origin in the high grade bleached pulp made from the Western Hemlock which is strictly a native son of the Pacific Northwest. And that goes also for rayon.

Following the growth of the new items themselves, now come the converters with their equipment for supplying adding machine rolls, cash register rolls, bags of all sorts and kinds and the beautiful inside wrappers and liners for Western-raised dried fruit in its fancy packages. Envelope factories too are here and this development, while dating back for sometime, now permits the buyer to buy locally-made envelopes in practically every large city bordering on the Pacific. Shipping tags no longer claim eastern paternity. The tag board made in Washington, converted in a nearby city to shipping tags, is boxed in a box made of Pacific Coast chipboard and labelled with a label printed on western paper and every operation means that the Pacific Coast dollar is working largely for the native.

I close by saying just a word about the quality of the paper items now made in the West. Maybe I'm prejudiced, being a native son, but despite that fact I do come in contact with a lot of different kinds of paper made in many places in this country and abroad. Speaking generally, no better book paper, bond paper, or wrapping paper or board is made better than is now being made here, and sold here, or elsewhere. We of the paper industry have much to be proud of and much to be thankful for but "boy, you-ain't-seen-nothing-yet — wait-till-we-get-started!"

UNITED STATES TOTAL PAPER PRODUCTION

Distribution According to Principal Grades
Source—American Paper & Pulp Association

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